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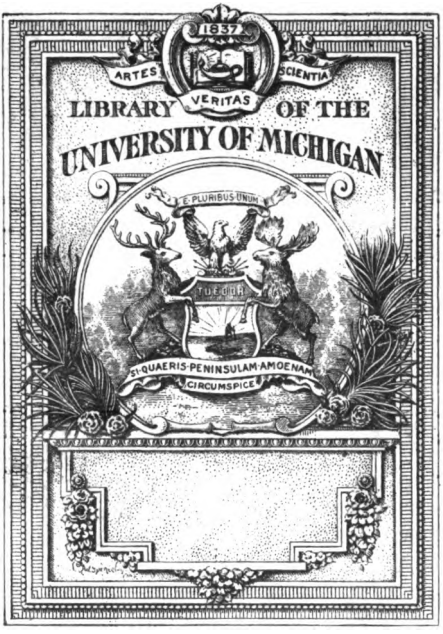

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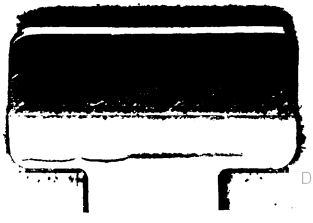

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NEW HAMPSHIRE AGRICULTURE.

FIRST ANNUAL REPORT

OF THE

BOARD OF AGRICULTURE

TO

HIS EXCELLENCY THE GOVERNOR.

MAY 1, 1871.

PREPARED BY

JAMES O. ADAMS, SECRETARY.

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ORREN C. MOORE, STATE PRINTER.
1871.

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NEW HAMPSHIRE AGRICULTURE.

To his Excellency the Governor of New Hampshire:

In preparing our first annual report, as a Board of Agriculture, we propose to discuss the great interest of the state, to that extent and with that fidelity which circumstances will permit.

It would be an exercise pleasant to us and interesting to those who may read the record of our proceedings, should we give a history of the progress of agriculture in our state, and compare the practices of to-day with the customs of former generations.

Looking back upon the record, we should see the pine tree representing the rural interests of New Hampshire, when cutting timber from our extended forests, fishing upon our limited sea coast and by our clear, fresh lakes and streams, and hunting fur-bearing animals wherever the courage of our hardy settlers led them, were the sole pursuits.

Then a ship upon the stocks was adopted as our emblem of industry, and was incorporated into the seal of the state. The sun of civilization began to shed its rays upon the wilderness, enterprise was first recognized, and thrift and prosperity succeeded. Roads were cut through the forests, over high hills and broad valleys, along which huge masts were drawn to river landings to be floated to the ocean.

This led to inland settlements, to the clearing of lands, and the culture of cereals and vegetables for the support of life. Cattle were bred to furnish the requisite power for the enterprises which promised a rich reward, and grass and grain were cultivated to afford them support. Hence the plow and the hoe became our industrial emblems.

The nomadic life of the hunter was gradually abandoned, the

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exhausting labors of the lumberman became irksome, and our people devoted their energies, unwillingly at first, but faithfully, to the cultivation of a hard but new and productive soil. The harvests were abundant, and, after affording a comfortable support for the increasing population, left a surplus to be exchanged for the necessaries of life which could not be produced at home. Horses were now to supplement the patient ox. Teams were rapidly increased and traversed the state from inland town and hamlet to county shires, to villages on river banks or to the market that our only seaport furnished, bearing away the varied products of the farm and bringing back the fruits of commerce.

Until this period in the history of New Hampshire agriculture, no wheels had been turned by our frequent waterfalls, nor had their monotonous murmur been relieved by the music of the spindle or the ring of the hammer. But at length the spirit of enterprise, prompted by the desire of gain, converted the wilderness, the rocky hill-side and the barren plain about our water-powers on the Merrimack, the Nashua, the Cocheco, the Ashuelot and other rapid streams, into sites of busy towns and thriving cities. The construction of railways followed, or was simultaneous with the erection of mills and machine shops, and both of these agencies operated together to open new markets to the husbandman, to create new fields of rural labor and to bring a profit to the tiller of the soil who dwelt within their immediate reach. Market gardening, the growing of fruit, the raising of milk, the breeding of improved stock, are some of the sources of income to the farmer which have sprung into life at the call of the progressive spirit of the age. Such are the important points in the agricultural history of the state.

Added to these, and above all, are the revelations which, within the last half-century, science has made in the fields of nature. What new methods of culture have been discovered! What new plants and fruits have been propagated! What new riches have been found in the bowels of the earth! What new fertilizing materials have been compounded by the principles of chemistry! What new labor-saving machines have come from the genius of the inventor and the handiwork of the artisan!

We might longer dwell upon this, and, instead of the mere outlines which we have here suggested, write the full record of the

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past; but the proper limits of our report would be exceeded before the task was completed. We leave it and refer to other topics which should interest the people of New Hampshire.

ORGANIZED AGRICULTURAL ASSOCIATIONS.

The first organized agricultural society in the state of which we have any accessible account originated in the county of Rockingham, as early as 1814. We find a record on the journals of the legislature of that year when a charter was granted. It probably had its central point at the then important town of Chester, or at Exeter.

A society was instituted in Cheshire county not long after, as we find it named in connection with the Rockingham society in the journal of 1817, when a small sum was appropriated to them by the legislature.

The general revival of business after the termination of the war for "free trade and sailors' rights," with the encouragement given temporarily by the state, induced other counties to institute agricultural organizations. Hillsborough and Strafford each organized in 1817 and received charters the ensuing year. Grafton followed the next year and Coos very soon afterwards; so that in 1819 and 1820 agricultural societies existed, held fairs and received benefactions from the state, in every county, there being six organizations. These maintained a name only for a few years. Their existence marks an era in the agricultural history of the state and becomes a matter of interest as a basis of comparison with the present day.

The first appropriation was $100 to each of the two incorporated societies in the state —Rockingham and Cheshire.

The following year a resolution was passed, giving to the Rockingham society $300, and an equal amount to the Cheshire society. The sum of $200 was voted to each of the other county societies, viz: Hillsborough, Strafford and Grafton, provided they should organize before the meeting of the next legislature.

In 1819 the sum of $200 was voted to each of the five established societies, and an equal sum to the Coos society as soon as it should be fully organized. A provision was very properly appended as the condition of receiving the state bounty, which re-

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quired that the money be expended in the interest of agriculture, and an equal sum be added by the society, and that reports be made to the Secretary of State.

The next year, 1820, it was voted that $100 be paid to each county society, on the same condition as the year before, but in case of Rockingham, Strafford, Hillsborough and Coos, it was to be withheld until returns of the previous year were made.

Up to this time only about $3,000 had ever been expended for the promotion of agriculture by the state.

Appropriations were continued for several years to such county societies as made reports of proceedings. But, strange to say, most of the county organizations forfeited their right to draw on the state treasury by their own negligence. Such as did comply with the requirements of the law received the bounty, and made great improvements in the various branches of agriculture.

THE OLD BOARD OF AGRICULTURE.

The year 1820 was characterized in legislative history by the creation of a BOARD OF AGRICULTURE, in accordance with the recommendation of Governor Bell. The board consisted of the presidents of the several county societies and a delegate from each.

There were six societies existing at that time, consequently the board, if full, consisted of twelve members, and organized in 1821. We have not at hand a list of the members, but among them were William Badger, who was chosen president, and Matthew Harvey, secretary. Both of these gentlemen were prominent politicians of that day, and both were subsequently governors of the state. Other members were Samuel Grant, of Walpole; Rev. Humphrey Moore, of Milford, recently deceased; Amos Kent, and Messrs. Gilman, Dinsmoor, Wilcox and White.

A report was made and printed in 1822, and was regarded as an able document. But few copies are now to be found. The Secretary has made an effort to secure one to preserve as a curiosity in agricultural literature, but has not succeeded in his efforts.

A modification took place in the law after a brief period, limiting the members to one from each county, to be chosen by the county societies. But as the societies became inoperative and disorganized, the board ceased to exist, and the law, though unrepealed, became entirely useless. Thus originated, lived and ter-

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minated the first board of agriculture in New Hampshire and one of the first in the country.

THE NEW BOARD OF AGRICULTURE.

At various times within the last quarter of a century have efforts been made to re-establish the board or create a new commission; and as often has a failure, sometimes by a single vote, been the result. At length, in the year 1870, after a lapse of half a century, a new board was organized by the unanimous votes of both branches of the legislature, and in due time the governor and council made appointment of the gentlemen herein named, to constitute the board:

Merrimack County — Moses Humphrey, of Concord.
Belknap County — Thomas J. Whipple, of Laconia.
Hillsborough County — James O. Adams, of Manchester.
Cheshire County — Sampson W. Buffum, of Winchester.
Carroll County — W. H. H. Mason, of Moultonborough.
Grafton County — Luther B. Hoskins, of Lyman.
Strafford County — Charles Jones, of Milton.
Rockingham County — Joseph F. Lawrence, of Epping.
Coos County — Nathan R. Perkins, of Jefferson.
Sullivan County — Edward H. Brown, of Croydon.

In the month of December Mr. Brown resigned his place and was succeeded by John S. Walker, of Claremont, who has never met with the board, being absent in Europe. A few months later Col. Whipple, who never acted as a member, was succeeded at his own request by Capt. Thomas Coggswell, of Gilmanton, and on the resignation of Hon. Charles Jones, on petition of the members, Hon. Hiram R. Roberts, of Rollinsford, was appointed to fill the vacancy.

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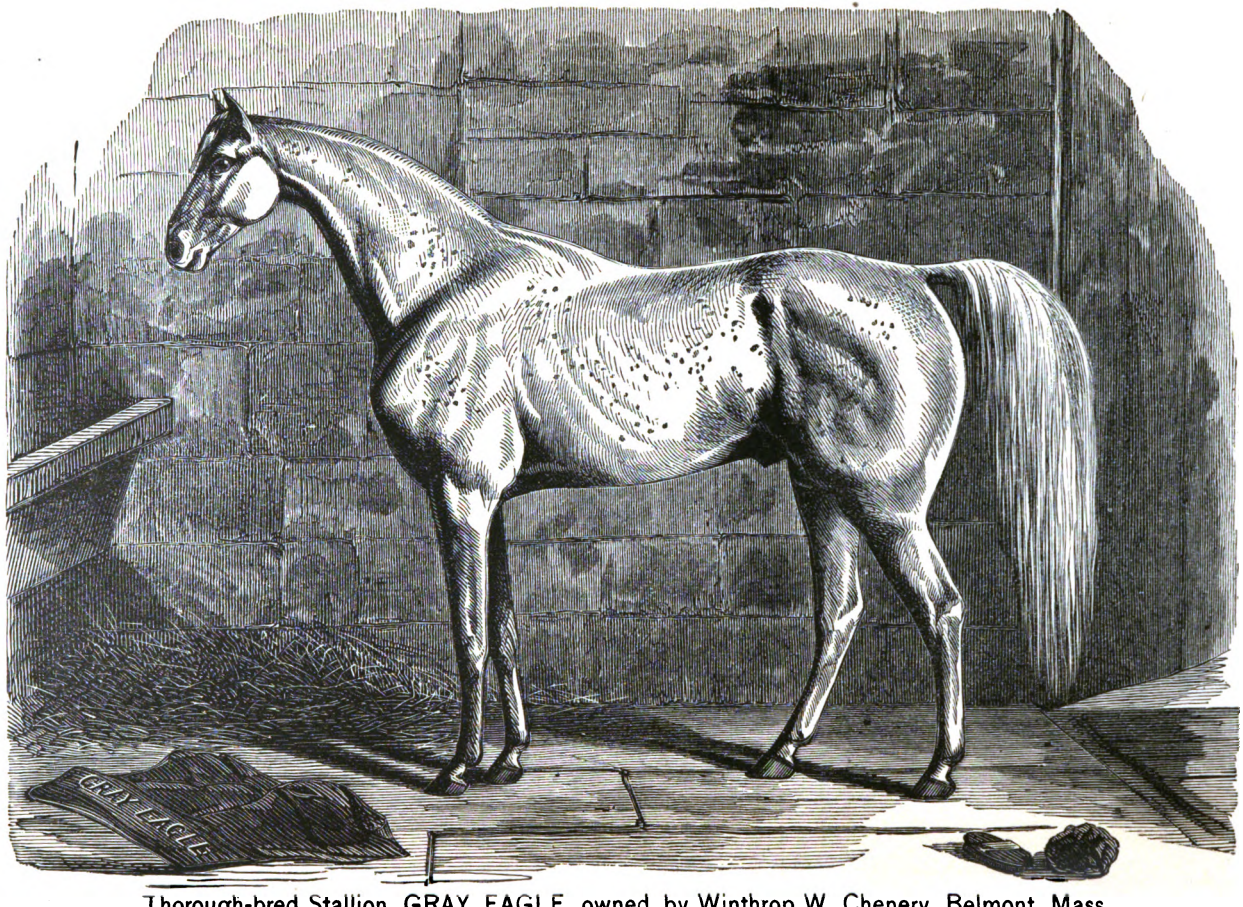

Thorough-bred Stallion, GRAY EAGLE, owned by Winthrop W. Chenery, Belmont, Mass.

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PROCEEDINGS OF THE BOARD.

FIRST MEETING.

In response to a call of the member first named, the board, with exception of the member from Belknap, met at the Council Chamber in Concord, on Tuesday, the 23d day of August, and organized by the unanimous choice of Hon. Moses Humphrey, of Concord, as chairman, and James O. Adams, of Manchester, as secretary.

A good portion of the session was occupied in discussing plans of operation, in which all the members of the board gave a free expression of opinion.

Several propositions were discussed, looking towards the collection of agricultural information, the recommendation of the proper breeds of animals for our state, the holding of meetings for discussion in the several counties, and other matters within the proper sphere of the board. It was voted that members be commissioned to prepare essays or be ready to talk on call on the following topics:

"Short Horns," as adapted to New Hampshire, with the points to be considered in selecting, was assigned to Mr. Buffum, of Winchester.

"Devons," with the same qualifications, was committed to Mr. Brown, of Croydon.

"Sheep and Sheep Breeding" was entrusted to the hands of Dr. Mason, of Moultonborough.

It was understood that these subjects, and others not then designated, would be discussed during the autumn and winter, and that so much of the discussion as appeared to be valuable should be incorporated in the report to the governor.

It was ordered that members of the board attend the fairs as far as possible, note and report whatever was worthy of commendation or of condemnation.

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Special assignments were made with reference to county and local exhibitions and it was voted that all should attend the New England fair, at Manchester. To the

Cheshire, at Keene — Messrs. Buffum and Humphrey.
Ashuelot, at Winchester — Messrs. Lawrence and Jones.
Strafford, at Dover — Messrs. Mason and Adams.
Rockingham, at Kingston — Messrs. Jones and Adams.
Piscataqua, at Portsmouth — Messrs. Adams and Lawrence.
Hillsborough, at Milford — Messrs. Buffum and Adams.
Contoocook, at Hillsboro' Bridge — Messrs. Brown and Adams.
Merrimack, at Concord — Messrs. Perkins and Whipple.
Grafton, at Plymouth — Messrs. Hoskins and Mason.
Coos, at Lancaster — Messrs. Humphrey and Perkins.

The several members were instructed to attend such town fairs as were held in their respective counties.

SECOND MEETING.

The second meeting was to be held at Manchester on the 7th of September, and a minority of the board held several sessions, but transacted no business. A meeting was held at Concord, on the 14th of October, which was attended by eight of the ten members.

Reports of delegates to the several county fairs were made and accepted, and are presented in this report in connection with an account of the various organizations.

Among the measures adopted at the meeting the most important were, that for presenting an address to the farmers of the state, arrangements for holding a series of public gatherings for discussion, and for the organization of the town clubs.

ADDRESS TO THE FARMERS.

A sub-committee, which were authorized to issue an address to the farmers, sent out a paper from which we make selections, not deeming it necessary to reprint in full. The committee say:

Prior to the opening of the series of fairs just now closed, arrangements were made for members of the board to visit the New England fair and as many of the local fairs as circumstances would permit, and to aid, so far as

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courtesy would allow, in correcting any mismanagement, and to commend such features as seemed worthy of approbation. Nearly every member was present at the union fair of the state and the New England societies, and a majority of the other exhibitions in the state were attended by members of the board.

While such organizations as state societies, or even those formed by a union of states, like the New England society, may not be calculated to result in so much direct, real benefit to the community as the county fairs of the same territory, they are serviceable in giving the people an opportunity, not often enjoyed, to gain a knowledge of breeds of stock, of farm products, of implements of husbandry, and of processes of cultivation, that they could not obtain at restricted county and local fairs. While, then, we approve and advocate the exhibitions of the larger organizations, we desire especially to urge upon the farmers of every county, and indeed of every large rural district, or town, to organize a society in their respective locations, and institute and sustain annual fairs without delay.

We urge upon the farmers to take the lead in the organization and control of agricultural associations and exhibitions, to assume the positions of honor and influence, according only an appropriate influence to professional gentlemen and none to politicians. The farmers of the state should be foremost in all that pertains to their calling. They have the ability to control and to manage the agricultural institutions of their respective counties and of the state, and they should take their positions and bear the responsibilities of their success or failure. We believe in the economical, but not niggardly conduct of our fairs, in offering liberal premiums, and in making liberal arrangements for the convenience of exhibitors and visitors.

We feel called upon, in the interests of the practical agriculturists, to condemn the practice of appropriating too liberally from the funds of the society for awards to horses and for exercises in trotting and running, and reducing the premiums on neat stock and farm and dairy products to the lowest possible figures.

An examination of the premium lists of many county societies will show that far the most liberal awards are paid to horses. The farmer's boy will consume three or four days in taking his steers or other animals to the show, receive an award of three or five dollars,— seldom more,— while a neighbor may gaily mount his sulky, drive to the fair, and receive from three to five times as much as he, who, equally deserving, walked the long and weary road to the show. We believe the sums paid for trials of speed should be limited to the revenue received from the entrance fee of the competitors, while only the ordinary premiums on the several classes of horses, as on corresponding classes of neat stock, should be paid from the legitimate funds of the society. And we feel it our duty to recommend to managers of fairs to afford more encouragement, if possible, to the show of family driving horses, draft animals and superior breeding stock.

We recommend giving increased attention to the presentation of farmers' teams of four or six oxen, properly matched and disciplined, attached to cart or wagon bearing samples of farm products. Let them take the place of town and county teams, which are often brought together at great expense, and are too often sources of great inconvenience.

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We regret to notice, as we often do, that plowing is altogether neglected at our fairs, and often when practised the trial is so conducted as to be entirely worthless. We regard plowing as one of the most important exercises upon the farm, and believe such examples of work and the manner of executing it should be given, as will instruct and aid the farmer in the preparation of the soil. Every society should make it a point to encourage repeated workings of the soil, that thorough pulverization may be attained.

To secure fair and just awards of premiums, we recommend great care in the appointment of committees. Fair men, above suspicion, suited to their position, should be appointed and apportioned over the county or territory embraced in the limits of the society.

We recommend mileage upon stock from a distance, placing the distant on an equality with those near the exhibition.

We cannot consider these fairs complete without the evening gathering of the farmers for discussion. We hold that the managers of our fairs, who fail to provide a place for and call such meetings and see that they are sustained, are as derelict in their duty as if they failed to offer a premium list, or provide exhibition grounds.

We have seen much in these exhibitions to commend, and we urge their continuance, the changes we have suggested, and such other improvements as their managers and interested agriculturists shall consider necessary.

We believe they are productive of much good, socially, mentally and morally, as well as in the interest of agriculture,—good substitutes for the old military gatherings,—and we hope they may be so conducted as to be anticipated with equal pleasure by the sturdy yeoman who contributes his field crops and stock; the matron with her dairy products; the daughter with her beautiful handiwork, all coming together once a year, at little expense, to exchange greetings, to renew the acquaintance of former years, and to engage in a generous rivalry for the offered prizes.

We cannot close this portion of our address without urging a more general subscription to agricultural papers. Indeed, we almost feel called upon to advise the farmers of New Hampshire to subscribe for no paper unless it devotes a portion of its columns to the interests of agriculture. We are glad to see that this practice is adopted by many of the papers of our state, and hope it will be adopted by all, circulating among, and deriving their support as they do, without an exception, from an agricultural people.

By the provisions of the enactment under which we were appointed, it is made our duty to analyze the numerous fertilizers offered in our markets. While no special appropriation has been made for this purpose, we shall endeavor to correctly ascertain the value of these fertilizers to the farmer, and inform them in season for next year's use.

We earnestly urge the formation of town and county societies for weekly or monthly meetings for the discussion of agricultural matters. The advantages resulting from such gatherings are too numerous and apparent to require enumeration. The effects are seen and felt in all communities where this course has been practised, and we cannot too strongly urge its more general adoption and continuance.

In accordance with the custom of the boards of agriculture in other states, we have announced a public session at Concord, of two days' duration, and have solicited the assistance of all interested in agriculture.

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At this meeting, if agriculturists from the different counties desire, we will appoint meetings in each county of the state, for the ensuing winter, for the discussion of agricultural subjects, and it will give us great pleasure to join our efforts with those of others, in this attempt to revive or create an interest in agriculture.

Farmers of New Hampshire! The late census shows us that our state is the only one reporting a decrease in population.

Our warehouses are filled to overflowing with the products of the west, while there is not a country store in all our state that is not retailing, to-day, western corn and flour, to our own people. Our sons and daughters are leaving us, and in seeking new homes to better their fortunes are leaving behind them privileges which they cannot gain elsewhere for themselves or reasonably expect for their children. Around our waterfalls, little villages are springing up, while deserted houses tell us that the country is getting depopulated.

Cannot this course of things be changed? Cannot something be done to stop this tide of emigration and keep our children in the land of their fathers, to live where every association is a pleasant one, and where all our recollections are indeed "sunny memories?"

Are our homes growing unpleasant? Are our hill-sides barren and our valleys unfruitful, and have the graves of our fathers no ties to bind us to our old homes?

If this desire to leave our homes is either the defect of our education or the want of fertility in our lands, the remedy is within ourselves, if we will apply it. More taste displayed around the old homestead, and the enjoyment of many inexpensive privileges its occupants now unwisely deny themselves, will render it more attractive, and will make the children love the homes of their childhood and its associations too well to leave it for an uncertain home elsewhere. Educated labor and a proper use of all the means within our power will make our hill-sides and valleys blossom again, and show us our entire independence of the great west.

If in discharging our official duties we can do anything towards contributing to this result, we shall feel amply paid.

Time and space forbid our saying more in this connection, but we earnestly hope some of these suggestions, at least, may be heeded, and that all who have the true interests of our state at heart, will join their efforts with ours to make our beautiful state even more prosperous in the future than it has been in the past.

PUBLIC MEETING AT CONCORD.

Arrangements had been made and a programme announced for a general meeting of the farmers of the state, in Eagle Hall, Concord, on the 29th and 30th of November. Accordingly, on the day first named, the meeting opened, with a number somewhat smaller than was anticipated, but hour by hour increased to sev-

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eral hundred, including many of the substantial farmers of all sections of the state.

WELCOME ADDRESS.

They were welcomed to the city of Concord and to the hospitalities of the citizens by the following brief but appropriate remarks of Hon. A. G. Jones, mayor.

Gentlemen of the Convention:

In tendering to your distinguished body our city's recognition, allow me to mingle with you my regrets at the somewhat unpropitious circumstances under which this, your present gathering, assembles.

I trust, gentlemen, among the many valuable suggestions which you may be enabled to make, some may serve to render the pursuit of agriculture more attractive, and tend to arrest the tide of emigration from our rural districts to our more densely populated localities.

I tender to you, gentlemen, the city's welcome, assuring you that we deem it highly complimentary that you have selected this as the seat of your deliberations and hoping that your brief stay here may be both agreeable and profitable.

Hon. Moses Humphrey, chairman of the board, in assuming his position in the chair, gave the following brief address, regarding the history, the purpose and the work of the board of agriculture.

REMARKS BY THE CHAIRMAN.

Gentlemen of the Convention:

It is with pleasure that I greet you at this first meeting of the farmers of New Hampshire, convened under the auspices of the state board of agriculculture.

I will read a copy of the act of the legislature of the present year, establishing the board which inaugurates its labors by holding this meeting.

AN ACT to establish a Board of Agriculture.

Be it enacted by the Senate and House of Representatives, in General Court convened:

SECTION 1. The governor, with the advice and consent of the council, shall, prior to the first day of August next, appoint ten practical and intelligent citizens, one from each county in the state, who shall constitute a board of agriculture, and hold their offices for three years.

SECT. 2. The persons so appointed shall meet at such time and place as the first named in said board shall designate, and choose a chairman, appoint a secretary, and prescribe his duties. They shall investigate such subjects in relation to improvements in agriculture and kindred arts as they shall think proper, shall cause to be analyzed samples of such commercial fertilizers as may from time to time be offered for sale in this state; collect and distribute grain and other seeds; keep full records of their proceedings; and they may take, hold in trust for the state, and exercise control over donations made for promoting agricultural education and the general interests of husbandry.

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SECT. 3. They shall solicit returns and reports to the board, from the different agricultural societies in this state, and provide and furnish such blanks therefor as they may deem proper, to secure complete returns from all sections of the state. They shall make a full report to the governor of all their doings, on or before the first day of May annually, with such recommendations and suggestions as in their judgment the interests of agriculture shall require, together with a detailed and explicit statement of all expenses incurred by them. This report shall also contain all the returns received from the several agricultural societies in the state, which the board may deem useful.

SECT. 4. This report shall be printed, distributed and disposed of in the same manner and number as is provided for the printing and disposal of other state reports, by section six, chapter one of the pamphlet laws of one thousand eight hundred and sixty-nine, in relation to the public printing.

SECT. 5. The members of the board shall receive no compensation for their services, but shall be entitled to receive their expenses necessarily incurred in the legitimate discharge of their duties, to be determined by the governor and council, who shall audit their accounts. The secretary shall receive no salary, but for the services he may render under the direction of the board he may receive such compensation as the governor and council may determine.

SECT. 6. This act shall take effect and be in force from and after its passage. [Approved July 2, 1870.]

This act, it will be perceived, prescribes how the members of the board of agriculture are to be appointed, and affords some idea of their duties. In the latter respect, however, it is not very explicit or decisive; and the present members hardly know, as yet, what will be expected of them by the farmers of the state.

At the first meeting of the board after organization, discussion was had as to the best modes of carrying out the intention of the new law so as to promote most efficiently the interest of agriculture. At a subsequent meeting it was decided to be advisable as an initiatory movement to hold, at this time and place, a convention of the farmers of New Hampshire, for the purpose of discussing vital agricultural topics, comparing notes of individual experience in farming, and devising modes of future action by making arrangements, if thought advisable, for holding county meetings and organizing, so far as practicable, farmers' clubs in the several towns of the state.

You will see by our programme that we have arranged for the consideration of a wide range of agricultural subjects at this meeting. It is hoped that much good will come from the discussion; and that a new interest in one of the most important departments of industry will be here enkindled, whose increasing light and warmth shall be felt throughout the state.

A board of agriculture has been found in other states a very effective instrumentality for diffusing useful information, creating and maintaining a lively interest, and directing and systematizing effort for improvement. Such an organization is not entirely new in this state.

In 1820, an act was passed to institute a board of agriculture and provide for its organization. This board was to consist of the presidents of the several county societies, and a delegate from each society. It was to be organized by the choice of a president and secretary, whose duty it should be to collect information bearing upon the agricultural interests of the state, and to make a printed report annually in the month of June. This act was amended in 1821, so that the board, instead of consisting of the presidents and delegates of the county societies, should be composed of delegates chosen from those

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societies, each choosing one. It was made the duty of the secretaries of the county organizations to furnish the secretary of the state board with copies of all communications made to their respective societies, concerning the culture and management of crops, &c., on which premiums may have been awarded. Had this plan of securing reports and distributing and preserving them in printed form been carried out and continued to the present day, it would not only have secured great immediate advantage from the diffusion of needed information, but would now afford a history of the progress of agriculture in our state for the last fifty years, together with a fund of practical suggestions, both of which would be invaluable. In 1824 the act became null by the failure of counties to elect delegates. Probably not much had been done under the law; indeed, a practical effort under it could hardly have been organized during the brief period of its existence.

Many years later, the state assumed the expense of publishing a series of annual reports, containing the transactions of the state and county societies, comprising addresses and essays upon agricultural subjects, arranged for publication by the secretary of the state society. The volumes published under this arrangement, which answered one important purpose of a state board of agriculture, contain much valuable matter calculated to promote agricultural improvements. But this salutary provision for agricultural enlightenment was some time ago modified. A fault of the legislature in this direction, in our state, has been its lack of persistency.

There are gratifying indications, however, that New Hampshire will not long lag behind other states in liberally fostering agriculture by judicious legislation. Among these indications may be reckoned the establishment and endowment of an agricultural college and the creation of a board of agriculture. It is with the farmers of New Hampshire, now that the agricultural college is established, to say whether they will sustain it with their influence and patronage and make it what it should be, an institution that will be a credit and a benefit to the farmers of the state. It is to be hoped that legislative liberality will continue to enlarge until it shall embrace the dispensing of judicious gratuities to agricultural organizations and the providing of any other wise and available means calculated to encourage and promote a pursuit which must always be a prime resource of wealth and happiness in our state.

The meeting was now formally opened, and was sustained with an abiding interest for the two days, as the following outline of proceedings will show. The leading addresses, in part or in full, will be given in this report under appropriate heads in connection with similar remarks at other meetings.

The first topic for consideration in the programme was "Indian Corn, the profit from its cultivation, and its exhausting effects on the soil compared with that of other crops."

Hon. Simon Brown, of Concord, Mass., occupied nearly an hour in a full and interesting discussion of the subject, and was followed in a further consideration of the subject by Col. D. M. Clough, of

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Canterbury, who occupied the time until the adjournment, at noon.

At the opening of the afternoon session the subject for discussion was "Manures — the comparative value of commercial, composted and stable manures, and the economy of purchasing fertilizers to compensate for the loss by selling hay and other farm products."

The discussion was opened by J. F. Lawrence, Esq., of Epping, member of the board for Rockingham county, other gentlemen following in an earnest advocacy or condemnation of special fertilizers and the practice of many farmers. Among the speakers were S. C. Pattee of Warner, M. D. Lawrence of Rhode Island, Joseph B. Walker of Concord, John L. Kelley of Franklin, Dr. Mason of Moultonborough, Levi Bartlett of Warner and L. B. Hoskins of Lyman. Specimens of the Stevens dolomite were presented which called out a somewhat excited discussion.

In the evening session the subject assigned was "The agricultural advantages of the West and the East compared."

The first hour was occupied by C. G. Hawthorne, Esq., of Hopkinton, in a studied and excellent address on the subject, based on actual experience.

He was followed in brief but earnest speeches by Hon. J. W. Patterson, of the United States Senate, and by Hon. J. H. Ela, of the National House of Representatives. The meeting adjourned, and a session of the board was held and arrangements made for meetings at such places as offered proper facilities and promised a fair attendance.

On the second day, after the preliminaries of the opening, it was voted to appropriate a half hour to the consideration of a question named in the programme for which no assignment of time had been made — that of "Farmers' Clubs."

The Secretary was first called and occupied a considerable portionof the time, and was followed by Messrs. Hayward of Gilmanton, president of the Gilmanton Farmers' Club, Judge Roberts of Rollinsford, Joseph B. Walker of Concord, Gov. Brown of Mass., Col. D. M. Clough of Canterbury, Col. Geo. W. Riddle of Manchester, Mr. Tenney of Chester, Mr. Lyman of Exeter, and others, when the regular programme was resumed, and

A Paper on "the Drought and the means of preventing its usual effects," was read by James O. Adams, the secretary of the board.

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In the discussion which followed, Dr. Mason, Judge Roberts, Col. Clough, Mr. Lyman, O. S. Bliss of Vermont, Mr. Hills of Windham and other gentlemen participated and consumed the allotted time.

In the afternoon a paper on "Blood Stock, the breeds most desirable for New Hampshire," was read by Judge Roberts of Rollinsford, and was discussed at much length by S. W. Buffum of Winchester, C. S. George of Barnstead, the Secretary, Mr. Bliss, Mr. Lawrence, Chairman Humphrey and other gentlemen.

The evening hour was devoted to the subject of horses, when a paper on the "Breeding and Rearing of Horses" was read by H. W. Green of Hopkinton.

This called out remarks from Mr. Brown of Massachusetts, Col. Clough, and Mr. Hawthorne, not to name those who made miscellaneous speeches on the occasion.

The real work of the meeting was then concluded and its influence had gone out among the people of the state. As an adjournment was about to be moved, Mr. Lawrence, in behalf of the board, made appropriate remarks and offered the following resolutions, which were unanimously approved:

Resolved, That the thanks of the Board of Agriculture and the farmers attending the meeting be returned to Gov. Brown, and Messrs. Hawthorne, Ela, Patterson, Roberts and Green, and to the other gentlemen who have engaged in the discussions, for the aid they have given the board, and the gratification they have afforded the people by their remarks during the meeting.

Resolved, That we express our thanks to the citizens of Concord who have afforded entertainment to visitors, and in other ways contributed to the success of the meeting.

Resolved, That the Board is under especial obligations to the press of New Hampshire and the agricultural press of Massachusetts for their efforts, so essential in making our meeting a success.

John D. Lyman offered the following, which passed unanimously:

Resolved, That the hearty thanks of this convention are due and are hereby tendered to the Board of Agriculture of the State for the able, faithful and successful manner in which they have performed their respective duties in the advancement of the cause of agriculture in New Hampshire.

Thus closed a session of two days which was well attended and successfully conducted.

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MEETING AT MILFORD.

A meeting for discussion was arranged for Milford, to be held on the 22d of December, and the following programme adopted:

At ten o'clock, A. M., Thoroughbred neat stock; one o'clock, P. M., Farmers' means of mental improvement; three o'clock, P. M., Farm Experiences; seven o'clock, P. M., Milk and how to produce it.

The meeting assembled, but the advertised actors were not there; with the single exception of Dr. Mason, no member of the board was present. All were detained by circumstances they could not control.

The call to order was made by Mr. Moulton, president of the county society, who, after a few explanations, introduced Dr. Mason who presided.

The first subject considered was that of "Thoroughbred neat stock." William Ramsdell, Esq., occupied the first portion of the time and was followed by Ward Parker of Merrimack, the chair, Mr. Hutchinson of Milford, Mr. Abbott of Wilton, Mr. Moulton of Milford, Mr. Haseltine of Amherst, and Mr. Gilman of Nashua, consuming the morning session.

The afternoon subject was that of the "Farmers' means of mental improvement." The chairman led in the consideration of the subject; Mr. Ramsdell, Mr. Holt of Lyndeborough, Mr. Moulton of Milford, and Mr. Proctor of Milford, followed, and at its close the chairman announced that some time would be spent in relating farm experiences.

As but few of the remarks made will be likely to find a place in this report, we will give briefly some of the good suggestions of the farmers.

Mr. Ramsdell's experience in raising corn the past season was stated to be as follows: Planted as usual; corn came up, looked well; was forward and promised a good crop; then came the drought; the corn began to shrink, and continued shrinking until it was difficult to tell what it was; result, fifty bushels on two and a half acres. He thought if he had put his manure deeper down under the soil, or had spread it and plowed under, his crop would have been better.

Mr. Abbott, of Wilton, believed the best way of using manure to be by spreading the green manure upon the surface and then plow it in. This was the result of his experience.

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Mr. Prince, of Amherst, referred to his experience in raising apples the past season. Many of his neighbors thought the crop so large that there would be no sale for it. He endeavored to comfort them by expressing the opinion that it would be wanted. This had proved to be the case. All the apples and cider had been taken and more were wanted, and at better prices. He thought farmers were often in too much of a hurry; were too impatient to get rid of their crops. If they would exercise a little more patience sometimes they would get better prices.

Mr. Richardson, of Milford, said his experience the past season in raising corn was very similar to that of Mr. Ramsdell. His definition of a successful farmer was one who raised the best crops at the least expense.

Mr. Proctor, of Hollis, defined his idea of a good farmer to be one who improved his farm, who made it better in every respect; not the one who starved it to make a deposit in the bank. With him the past season had been a productive one. All his crops had been good and profitable. He had raised about seventy bushels of corn to the acre.

It was a successful meeting. Quite a large number of the prominent farmers of the county were present, and the discussions were animated and interesting.

MEETING AT WINCHESTER.

The third meeting was held in the town of Winchester, the residence of the member of the board from Cheshire, on the 18th day of January. The meeting was not large at the hour of opening, but closed with a full house. The chairman of the board, Hon. Moses Humphrey, on calling to order made brief remarks covering the object of the gathering, the design of the board to visit as many localities in the state as circumstances would permit, with a view to create a new interest in the agricultural cause.

He then announced the first topic to be "Farm Experiences of 1870." He expressed the opinion that, though to some extent crops failed in consequence of drought, farming returned a profit for the past year. He then proceeded to relate his own successes and failures for the year.

The chairman called for volunteers to relate experiences in

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farming. No one having a word to offer, Col. Clough, of Canterbury, was called out, and gave an interesting account of his farming operations.

Mr. Sargent, of Hinsdale, followed in an account of his operations on the farm. While he was speaking a party of fifteen vigorous farmers, constituting the Franklin Harvest Club, came in. They reside in the Connecticut river towns, between Winchester and the city of Springfield. They took part in the exercises of the meeting, relating their experiences and contributed much to the interest of the occasion. Mr. Weare, of Winchester, gave incidents in his farm practice, when the morning session terminated.

In the afternoon a paper on the "Breeds of Cattle" was read by O. F. R. Waite, of Claremont, who acted as substitute for Col. J. S. Walker, appointed to conduct the discussion on that subject. The speaker gave a history of the several leading breeds, going somewhat into antiquity, statistics, improvements, characteristics of breeds, the principles of breeding, the number of neat cattle, the number in our own state, and their estimated value.

Joseph B. Walker, Esq., of Concord, followed with a clear, comprehensive and valuable paper on "Drainage," based on his own practice.

The paper was discussed by Col. Clough, of Canterbury, and Mr. Sargent, of Hinsdale.

Mr. J. F. Lawrence, of Epping, read a paper on "Manures,"— the same, with a few changes, as that presented at a former meeting.

This was followed by a rambling discussion, interrogations and answers, regarding various phosphates and other manures, and the way of applying them, in which Mr. Taylor, of Hinsdale, and members of the Franklin Club participated.

The conclusion from the discussion was that in some soils the phosphates were indispensable, in others they were of little use. We must know something of the soil before we apply the corrective.

In the evening an intelligent audience assembled, including a large number of ladies.

The first hour was occupied in a familiar talk on the "Farmer's Winter Duties," by J. O. Adams, secretary of the board.

He was followed by Prof. E. W. Dimond, of the college of agriculture, in an hour's valuable exposure of the numberless frauds in the manufacture of articles of food in common use. He illus-

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trated his points by the use of chemicals, and performed many very instructive experiments.

The exercises of the meeting closed with resolutions of thanks on the part of the board to the citizens of Winchester for their many courtesies, and to those gentlemen not members of the board who had so cheerfully contributed to the spirit and success of the meeting; while on the other hand, the people of the town expressed great pleasure in the visit which had been made. The Secretary of the Harvest Club returned the thanks of his associates for courtesies and hospitalities extended to them. The meeting then adjourned to re-open at Keene the next day.

MEETING AT KEENE.

The meeting at Keene on the 19th of January was not very unlike that at Winchester, especially in the forenoon.

The Chairman explained the object of the gathering and remarked that in consequence of the absence of some parties who were expected, the programme would be varied somewhat from the original plan. It was then proposed that "Farm Experiences for 1870" be the first topic, and be open to remarks by any one. No one volunteering to speak, the chair called Col. Clough, who spoke for an hour in a very entertaining manner, on the successes of the season, the position of the farmer, his relations to society, the importance of taking a higher stand in social and political life, the need of a better education, more self-reliance, industry and persistence.

Dr. Twitchell, of Keene, spoke briefly and called up Mr. Samuel Woodward, of Keene, a farmer of experience and ability to talk. The forenoon was consumed in relating experiences upon the farm by Messrs. Buffum of Winchester, Allen of Surry, Leverett, Buckminster, Ackerman, of Keene, and occasionally a word from others.

In the afternoon Mr. Waite, of Claremont, repeated his Winchester talk about "Breeds of Cattle" which led to discussion, calling out Messrs. Buffum, Reed, Hardy and Woodward, when an adjournment was carried to the evening session.

A large audience assembled in the evening. It was anticipated

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that Prof. Dimond would remain and occupy some portion of the meeting, and there were some reasons to expect Hon. Marshall P. Wilder, who is a native of that county, but neither could be present. In order to occupy the time, the Secretary of the Board repeated his Winchester remarks, with some additions, relating to the farmer's work in winter time, which commanded an attentive audience for an hour, after which there was some discussion, and the farmers present demanded that another hour be spent in considering the question of commercial fertilizers.

Mr. Lawrence, of the board, opened the subject with a few remarks, and was followed by several brief and intelligent talks by the farmers present, the substance of which was that to succeed in farming we must have manure, and when we can't get that from the stable, we must use the phosphates.

At a little past nine, after the passage of complimentary resolutions to the citizens of Keene for courtesies, and to gentlemen who had aided the board, the meeting adjourned, leaving, as we have reason to believe, a good impression on the minds of Cheshire farmers, and receiving from them words of earnest good will.

MEETING AT LEBANON.

The board of agriculture called the fifth meeting in the winter series at Lebanon on invitation of the farmers' club of that place, on Monday evening, the 6th of February. Prior to the opening of the exercises, members of the board and several other gentlemen made a visit to Hanover and the Agricultural College. After spending a few hours in looking over the new building, the farm, the college libraries, museum, laboratory and philosophical apparatus, they returned to Lebanon in season for the evening work.

The meeting was held in the Town Hall. Mr. James Wood, president of the Lebanon club, called to order, and introduced Mr. Humphrey, the president of the board of agriculture, who presided. The chairman spoke for a few minutes and introduced Joseph B. Walker, Esq., of Concord, who has attended most of the meetings of the board, and made himself essentially serviceable by presenting the important subject of drainage. He repeated his lecture on that subject. A splendid discussion followed in which

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Col. Clough, James Wood of Lebanon, and Mr. Walker participated, keeping up the interest until a late hour.

The exercises were resumed at 9 o'clock the next morning, when the subject of wheat growing was first considered. Mr. M. D. Lawrence, of Massachusetts, occupied the first portion of the time assigned, and was followed by Mr. Baker of Lebanon, Mr. Walker of Concord, and others.

A studied and valuable address on the subject of "Sheep Breeding" was given by Dr. Mason, the Carroll county member of the board.

An animated and profitable discussion followed, participated in by Dr. Smalley of Lebanon, N. B. Safford, Esq., a member of the Vermont Board of Agriculture, Messrs. Worthen, Wood, Baker and Miller of Lebanon, Col. Clough of Canterbury, Dea. Buffum of Winchester and O. S. Bliss of Vermont.

The afternoon session was one of especial interest and was sustained with great ability.

The first exercise was an impromptu talk on the subject of "Dairying," by O. S. Bliss, Esq., of Vermont, secretary of the Dairymen's Association. This led to a prolonged debate on the profit of dairying compared with sheep culture.

The principal speakers were Dea. Buffum of Winchester, Mr. Safford of White River Junction, Col. Clough of Canterbury, Messrs. Duncklee, Dyer, Crafts, Breck and Noyes of Lebanon, and Palmer of Orford.

The evening session was well attended. The first hour was occupied with an address by James O. Adams, secretary of the board, on "Mental and Social Culture among Farmers."

Prof. Dimond, of the college of agriculture, was the next speaker, and made an enthusiastic address on the "Struggles and Demands of Science on the Business and Social World," and closed by a defence of scientific agriculture.

Dea. Buffum said he desired to express the satisfaction he had felt as a member of the board in his visit to the college of agriculture. He thought every farmer should look upon it with pride. He intended to send a boy there, and was not afraid he would be ill-treated. He commended the management of the college in high terms, and said the farmers had more to learn than men of any other profession. They need science at every step. He wished we were as deeply interested in agriculture as we should be.

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The chairman spoke of the fact that like sentiments had been expressed to-day by Col. Clough, who, though an original opponent to the institution, now warmly commended it, since becoming familiar with its plan of operations.

James Wood, Esq., introduced a resolution of thanks to the board, which was adopted.

In response the chairman expressed his satisfaction with the success of the meeting. He explained the purposes of the board and how they were to be made effective. The aim was to bring the subject of agriculture before the people in all its proper bearings, and the board felt repaid for their efforts, in the success which had attended them, and the interest manifested wherever meetings had been held.

At this point the meeting adjourned, but many lingered to exchange congratulations on the success of this first, but not last, attempt to bring the farmers of Lebanon and vicinity into consultation, and in direct contact with the more advanced and successfull agriculturists of the state and of other states.

MEETING AT DERRY.

The sixth meeting of the board was held at Derry on the 23d of February, and was one of the very best of the series. It was held in the Town Hall, under the arrangements of the Derry farmers' club.

Mr. H. P. Hood, president of the club, called to order, and, after a few remarks, introduced chairman Humphrey, who took charge of the meeting, with a few introductory words regarding farmers' meetings and the future intention of the board. He suggested that farming interests have been neglected, when by proper care they might be made most profitable. The object of the board is to create an interest, and revive the cause of agriculture.

The first hour was occupied by Joseph Kidder, Esq., of Manchester, who considered in an able manner some of the "Obstacles in the way of the farmer's success."

The discussion that followed was maintained by Judge Roberts of Rollinsford, Messrs. Underhill and Rice of Derry, Hills of Windham, Lawrence of Epping, and Clark of Londonderry.

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Hon. Simon Brown was called up and made a happy and effective speech of a half hour on the needed culture of the farmer.

An evening session was held, at which an increased number of citizens was present, and manifested their interest by earnest attention and frequent applause.

The leading exercise of the evening consisted of a "Comparison between New Hampshire and other New England states," by J. F. Lawrence of Epping, followed by Col. Clough, who fully endorsed the sentiment that our state was near the head of the list.

Further remarks were made by Judge French, of Massachusetts, on the position our state holds, and on milk producing and farming matters in general.

Joseph B. Walker, Esq., of Concord, spoke of the "leaks" in farming, and, among other things, said that the average loss of fertilizing matter from each household of New Hampshire amounted to $25 each, making $750,000 throughout the state. He closed with an appeal to the people of the state to arouse themselves to make the state nobler, wealthier and better.

Warren Brown, Esq., of Hampton Falls, detailed his experience as a farmer, showing his efforts to improve his farm, which, although involving a large expenditure, had, nevertheless, proved remunerating.

Gov. Brown spoke of the disadvantages under which our housewives are obliged to labor, and maintained that they should be provided with all possible advantages and conveniences for doing their arduous labors.

The meeting closed at a little past nine, having been enthusiastic in its character, and, we trust, valuable in its influences.

MEETING AT CHESTER.

At 10 o'clock on Friday, February 24th, a good number of farmers from Chester and adjoining towns assembled at the Town Hall on Chester street. The meeting was called to order by Hon. T. J. Melvin, president of the town society, who, after a little talk, introduced Hon. Moses Humphrey, president of the board, who presided. Mr. Humphrey stated to the meeting the object of the board, and related some interesting facts regarding its reception at other places.

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The first formal exercise in the forenoon was the reading of a paper on "Grasses and Forage Plants," by George F. Beede, Esq., of Fremont. Mr. Beede is a practical farmer of the progressive order, who has never ventured to make a speech or to appear publicly as an agriculturist. He has had experience and been accustomed to observe results of experiments, and speaks from actual knowledge and proof. The paper occupied nearly an hour in the reading, and was listened to with great interest. A discussion followed Mr. Beede's remarks, in which Mr. Melvin, Mr. Lawrence and others engaged.

Col. Clough thought, though the paper had many excellent suggestions, the policy recommended of growing more grass, roots and fodder corn was not of general application. He favored corn growing, the raising of cattle and swine, and feeding out grain, corn fodder and hay, and selling animals. We need mixed farming to bring in a profit and keep up the farm. On his light and intervale lands he could not succeed with the culture practiced by Mr. Beede. We must be constantly increasing the fertility of our farm, if we would make a profit. He would teach the boys to farm and not let them leave home until they knew how, even though they never practiced farming.

Mr. Walker, of Concord, believes in increasing the hay crop, and if Mr. Beede's theory is correct, Mr. W. is sure of accomplishing a long-desired object. He raised corn, but planted less than he once did, because he could not get labor easily. He didn't want men to feel that there is no profit in corn. He had once grown corn for fifty cents a bushel; recently it cost him seventy cents, and then he found a profit of sixty cents, or $30 an acre, and he expressed a doubt if more than that could be realized from grass. He approved Mr. Beede's plan of rolling in grass seed, and commended the revolving horse rake with wheels.

Mr. Warren Brown, of Hampton Falls, said he understood Mr. Melvin, of Chester, to say that his town (Chester) bought five thousand bushels of western corn yearly. "Why," said he, "the little town of Hampton Falls does that and loses nothing, while Hampton bought, last year, fifty-two thousand bushels."

He advocated grass growing, especially on land adapted to grass. He would not attempt to thwart nature, except in cases of clear advantage. He held to plowing impoverished grass land in August and seeding. He would put on herds-grass, red-top and clover freely.

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After still further expressions of opinion by several gentlemen, the meeting adjourned until half past one o'clock.

In the afternoon Mr. Walker read his paper on "Drainage," and was followed by Judge French who said he had read a very flattering account of his own good works in the "History of Chester," and his friend Walker had given him the credit of being the New Hampshire father of drainage tiles, so he had done something towards achieving success; but if he had done anything worthy of mention, he should give the credit to his bringing-up, in the good town of Chester. He related his experience in drainage, especially on a farm in Concord, Mass., which he recently bought. His efforts resulted in draining a large, unsightly basin and surrounding land, so that immense crops are now grown on the spot. He explained the manner of laying out drains, the inclination to the foot or rod, the depth for laying tile, and the effect of frost. He then gave an account of the results of drained land in time of drought, and repeated many interesting statistics regarding drainage. He facetiously described the manner of digging post holes in the Chester soil, with pick and iron spoon, a process which Mr. Chamberlin said would bring on the rheumatism if anything would. Mr. F. thought Chester farmers could not afford to dig drains, the ground is so compact. The soil there would not pay for draining, with some exceptions. It was not generally necessary.

Mr. Warren Brown followed. He is a believer in draining, and uses tile. He thought drainage was worth something as the means of aerating the soil.

Col. Clough gave an interesting account of draining two tracts of land on his farm, once worthless, now some of his best land.

Mr. Learnard, of Chester, asked if the frost would affect the tile so as to throw them out of place.

Mr. Walker thought they should go below the frost.

Mr. French did not regard that as essential, as the ground could not heave enough to displace them if well laid.

A paper was read on "Plant Growth," by William H. Hills, Esq., of Plaistow, of much value, which commanded strict attention. Remarks were made by Simon Brown, Mr. Walker and others, when, at five o'clock, the meeting adjourned until evening.

In the evening session, Hon. Hiram R. Roberts, of Rollinsford, read his paper on "Breeds of Neat Cattle." The other speakers for the evening were Mr. Brown of Hampton Falls, Judge French, Gov. Brown, Mr. Walker and Mr. Hills of Plaistow.

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Dea. Melvin returned the thanks of the people of Chester to the board, which Judge French seconded, paying a high compliment to the board and their system of earnest work.

Mr. Lawrence, of Epping, member from Rockingham, returned the thanks of the board to the people of Chester and Derry, for their courtesy and energy, and to the several gentlemen who had so ably assisted them in making the meeting a success.

The meeting at Chester was one of the same earnest character as that at Derry, and the Chester people seemed to vie with those of Derry, in affording every facility to the board of agriculture and those who assisted them.

MEETING AT MEREDITH VILLAGE.

A meeting was arranged for the 24th of March at Meredith Village on invitation of the successful farmers' club of that place. But the Secretary not being able to be in attendance at the assigned time, met with the club on the preceding evening and addressed them for an hour on the "Social and mental needs of the rural population," and was followed by Mr. Kidder, of Manchester, who discussed at length and with ability what he denominated "Household Farming," including among other topics that of butter-making and putting up products for sale.

Mr. Neal, the president of the club, occupied the chair, and an intelligent audience kept their seats, with no indication of restlessness, through the evening.

The next day and evening were occupied by addresses on "Sheep-breeding," by Dr. Mason, "Drainage," by Mr. Walker, "New England as a farming section," by Mr. Lawrence, and some general remarks by Col. Clough, Col. Towle, Mr. Vaughan, Col. Neal and other gentlemen. The sentiment of the people in that town is an enlightened one, and the remarks of those present showed that the winter discussions had not been in vain.

This was, strictly speaking, the last of the series of public gatherings, though on the pressing invitation of interested parties a semi-official

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MEETING AT EXETER

Was held on the 29th of March, at which the talking was done by Mr. Lawrence, Mr. Beede of Fremont, Mr. Lyman of Exeter, Judge Roberts of Rollinsford, W. H. Hills of Plaistow, W. H. Hunnewell of Exeter, and others.

OTHER WORK.

As much time as we have spent in sustaining these meetings, we have not confined our efforts to public work alone; we have done much in gathering statistics and facts connected with the great interest we are endeavoring to subserve. This has been the most laborious of the Secretary's duties. Aside from the many addresses and brief speeches which members of the board have made, they have enlisted others in the work, who have given material aid in the cause, willingly, and spent not only time, but incurred the expense incident to travel and entertainment. In this work, Joseph B. Walker, Esq., of Concord, Col. D. M. Clough of Canterbury, Hon. H. R. Roberts of Rollinsford, (who was not at that time a member of the board), have done such gratuitous service for the state as should lay the farmers under personal obligations to them, while others, like Hon. Simon Brown of Massachusetts, though regarded as a New Hampshire man, Joseph Kidder, Esq., of Manchester, Col. O. F. R. Waite of Claremont, George F. Beede of Fremont, W. H. Hills of Plaistow, and many others have rendered us important assistance. In consequence of engagements and existing circumstances only four of the ten members have prepared written papers for public occasions, and only five have spoken at the meetings, yet more than twenty-five addresses have been given, by the members, and nearly twice that number by invited and voluntary speakers, to say nothing of as many more valuable "talks" called out unexpectedly by the discussions.

The Secretary has traveled quite fifteen hundred miles necessarily in the performance of his duties and several members have been subjected to even more journeying than that. The number of letters written by the Secretary in his correspondence with

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members of the board, with officers of kindred organizations, and with farmers is more than two thousand, besides issuing many hundred circulars to towns and individuals. Of nearly all of these meetings he has written as brief reports as could conveniently be published by the newspaper press. The amount of original matter presented to the public through the agency of the board would fill an octavo volume three or four times as large as this printed report.

As is evident, we have, in the performance of our duties, expended no small amount of time, and suffered no small degree of inconvenience. But on the other hand we have almost invariably been received with such cordiality and been so earnestly seconded in our efforts by the farmers in every town where meetings have been held, that we have felt compensated for our labor and inconvenience, and been re-assured in pressing on still more vigorously the work before us.

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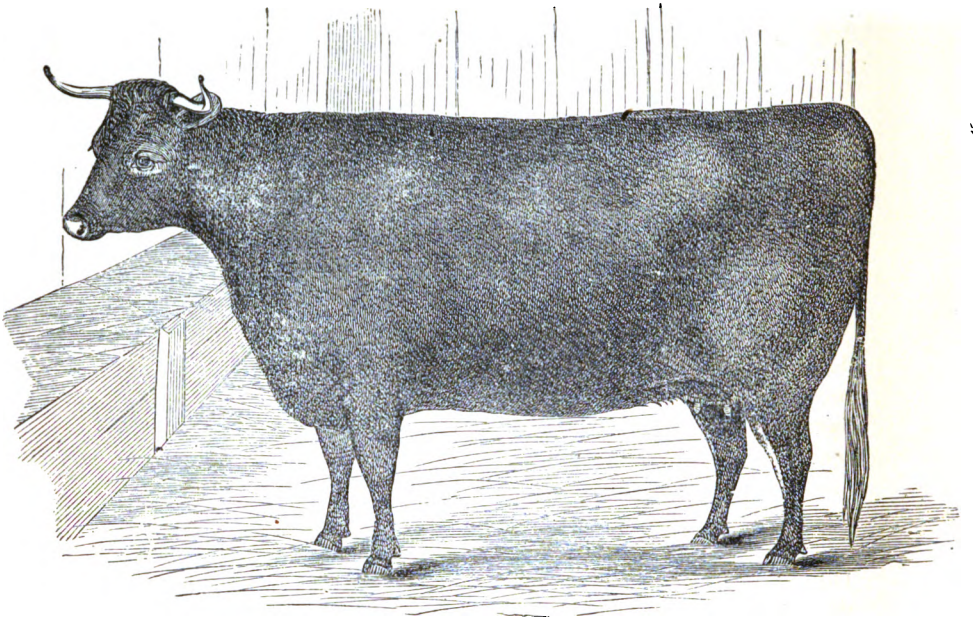
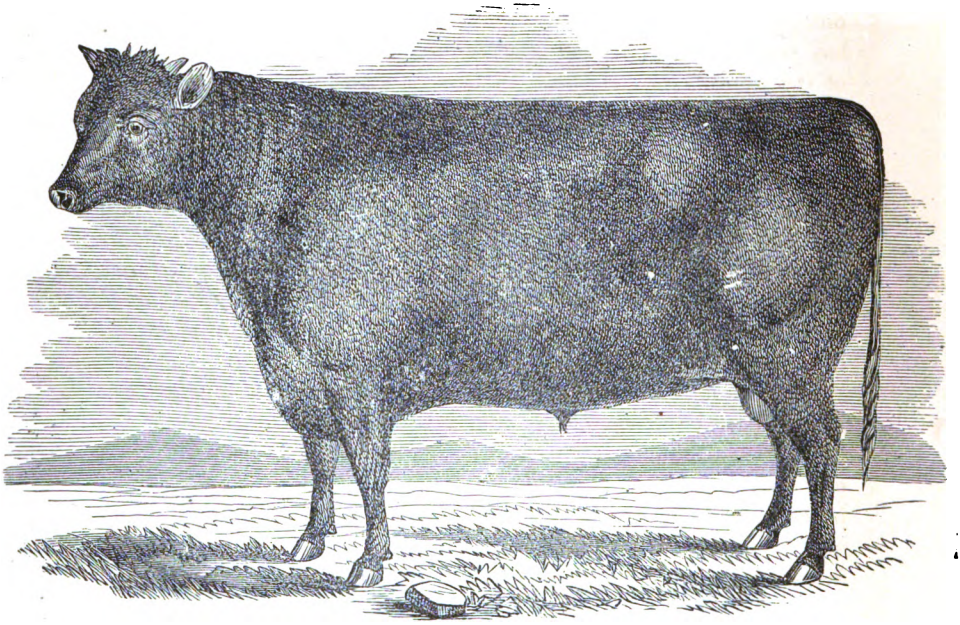


Devon Heifer, FAIRY 9th, owned by E. H. Hyde, Stafford, Ct.



Devon Calf, GEN. LYON, owned by E. H. Hyde, Stafford, Ct.

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REPORTS FROM TOWNS.

One of the special features of the office work which has been done is indicated by a circular issued early in November, to the several towns, and is more especially shown by the responses which have been made. At the date named a series of questions was sent out addressed "to the selectmen, town clerk, or any wide-awake farmer" in every town, and to every post-office in the state, accompanied by a prepaid envelope and blanks for a reply. At first but few towns, not more than ten per cent., made a response. During the winter, the number was considerably increased, but there was still a great deficiency. Accordingly, immediately after the March meeting, a second copy was sent with a note of explanation and a special request to the selectmen of such towns as had not given attention to the original call. To-day, the Secretary has returns from over one hundred towns, being nearly one-half of the number in the state. This result is quite as good as we should naturally expect. It is a fair index, we are confident, of the interest in the cause throughout the state. The first response came from the town of Dorchester and was signed by Ira B. Norris; the second from John O. Wiggin, of Stratham, both dated November 14, 1870.

The returns have been examined and placed on file for future reference. Meagre though many of them are, they give us an impression of the towns reported, and show that there are in some localities the right class of men in official positions.

These cannot all be published in full, as a matter of course. It is not desirable that they should be. The Secretary has caused them to be arranged so as to give some idea of the leading interests in the towns reported. Dry though they may be in detail and possessing great similarity, they will find in most towns some men who will be more interested in them than in reports of discussions, or papers on practical or scientific farming. In order

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to give the several questions proposed, and the manner in which some of our best and most intelligent farmers responded to them, we present in their proper places the reports of a few towns in full. The circular inviting replies was as follows:

NEW HAMPSHIRE BOARD OF AGRICULTURE.

SECRETARY'S OFFICE,
MANCHESTER, N. H., Nov. 1st, 1870.

DEAR SIR:—At a recent meeting of the State Board of Agriculture, the Secretary was authorized to issue a circular to such men as he has reason to believe are interested in the agricultural prosperity of the state, soliciting such a statement of facts as may be suggested by the following propositions:

1. Give the names of some of the agricultural men in your town, with the specialties to which they give attention.

2. Report the harvest of the various crops, compared with ordinary years, naming each crop specially.

3. What are the chief sources of income to farmers and other classes in your town?

4. Have you a farmers' club in the town or neighborhood? If so, report names of officers. If not, will you take steps to organize one, consulting, if you wish, the member of the board in your county, in regard to it?

5. Give the names of such insects as are injurious to vegetation in your section, and state what means are used to destroy them or prevent their depredations.

6. What commercial manures are used in your vicinity? How are they applied, and with what advantages?

7. What new or improved implements for farming have been introduced within a period of twenty years, and what advantages have resulted therefrom?

8. Are any kinds of blood-stock found among your farmers? If so, what owners and what breeds can you name? Also, inform us as to the advance in the price of horses, neat stock, &c., within twenty years. Give the names and residences of the owners of stock horses.

9. Is the product of corn, potatoes, and other farm products greater or less per acre, than it was ten years ago? If either, how much?

10. Do your farmers attend the state and county fairs, and other fairs and make exhibition of stock or farm products? If not, why?

11. Do the farmers in your section take agricultural papers, read agricultural books, and study to improve their methods of cultivation?

12. Do your farmers keep accounts, make experiments and profit from the results?

The secretary has proposed these questions in the name of the board, in order to call out information in regard to the agricultural interest of the state, with a view to incorporate any valuable results he may obtain, in the report to be printed and circulated according to the requirements of the law. It is earnestly hoped that town officers, enterprising farmers, merchants, or mechanics, into whose hands those circulars may fall, will take pains to make early and full replies.

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Where there is sufficient blank space following the question, the answer may be there written; in other cases, let the replies be given on a separate sheet, and it will be better to give answers to all questions in that way. An envelope, addressed and stamped, is sent out with each circular for a return without expense to the writer. Returns should be made by the first of January, or as soon as possible after that date.

Yours truly,

JAMES O. ADAMS,
Secretary of the Board of Agriculture.

ROCKINGHAM COUNTY.

One of the most valuable returns in the county, which we give, is that from

CHESTER.

1. Although there are none of our farmers who give the whole of their time to any special crop, still there are some who give prominence enough to particular crops to show what may be attained by those who will devote their time to the best manner of raising special crops. Mr. James Bell makes a specialty of producing milk for sale, and is also a large producer of hay and apples; Mr. Charles Wilcomb, apples, corn, hay, grain and vegetables; Mr. John Robinson, apples; Walter H. Noyes, apples, corn, vegetables and hay; Wm. S. Crawford, hay and corn; Thomas J. Melvin, hay and corn; S. S. Chamberlain, small fruits and vegetables; Wm. Tenney and son, apples, hay, potatoes and corn; Lewis Kimball, corn and hay; Lucien Kent, corn and small fruit; John H. Smith, corn and hay; S. F. Learnard, corn, hay, apples and small fruits. There are about one hundred farmers in the town, many of them as large producers as those I have mentioned.

2. We have had a season of extreme heat and drought, being favorable to some crops and unfavorable to others. Hay was less than an average, the drought of the preceding summer and an open winter having injured the roots; corn was about an average in quantity but of better quality than usual, pieces on light land or poorly cultivated suffering from drought; barley was above an average; oats, not an average; rye is not raised except on burnt land and was, I believe, very good; wheat is but little raised, and less sown this year than usual; potatoes were much below an

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average; vegetables, less than an average; small fruits were abundant, and apples more plenty than in any year in the last decade; I should think double an average crop.

3. To farmers the main sources of income are the products of the dairy, eggs, apples, hay, potatoes, wood and timber; but few raise corn enough for home use. To mechanics, shoemaking, carpentering, blacksmithing, woodchopping, saw-mills, hoop-poles, and the manufacture of water-pails and mackerel-barrels.

4. We have a farmers' club with the title, Chester Agricultural Society; the following are the names of officers for the present year: President, Hon. Thomas J. Melvin; Vice President, James R. Gordon; Secretary, Reuben H. Mitchell; Treasurer, Walter H. Noyes; Executive Committee, Wm. P. W. Whittemore, Lucien Kent, Edwin Haselton, Charles H. Knowles, Wm. Tenney, George S. Smith and Moses Webster.

5. The principal enemy the fruit grower has to contend with is the canker-worm. The most efficient preventive has been the use of coal tar around the body of the tree. The curculio is also very destructive. We know of but one preventive, to tar the trees, and but few take this trouble. The borer also causes the destruction of a good many trees. A sharp wire is the best exterminator. Keeping the ground clear of grass and weeds around the tree will prevent them from laying their eggs, to a great extent. The cut-worm is very troublesome to all farmers, annually destroying a considerable part of their crops. Our only remedy is, dig them out and crush them. Within a few years the cabbage-worm or caterpillar has become quite troublesome, and a large white grub is very destructive to grass.

6. Commercial manures are not extensively used here, most of our farmers thinking it does not pay. Superphosphate of lime is the favorite. Its main use is to hasten the growth of corn and other crops, and in cold land it is thought that it more than pays in the increased productiveness and earliness of crops. On land that is well drained, highly manured, and well cultivated they do not consider it pays. It is applied by mixing with the earth in the hill. Guano and bone meal are also used. Plaster is considerably used on pasture land; for planting potatoes it is put in the hill; the potatoes are considered better, and not so liable to rot, although not yielding so large crops as on highly manured land.

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7. The mowing-machine is the most valuable invention that the farmer has received, as it enables him to employ less help. He can finish his haying in better season and is not obliged to cut his grass unless the weather is favorable; he will clear his mowing-fields of rocks, bushes and other obstructions that he would not otherwise do. There has also been considerable improvement in plows, horse-rakes, cultivators and other tools, enabling the farmer to do a large share of his work with horses that was formerly done by hand.

8. There are but few full-blooded cattle in the town, but a large number crossed with natives and other breeds. Mr. Wm. Tenney has kept a Jersey bull, which has left his mark upon most of the young stock in his vicinity; Mr. Charles Wilcomb also has a herd of Jerseys; Mr. S. S. Chamberlain has Ayrshires crossed with Jerseys; Mr. William S. Crawford, Devons; Mr. N. S. Morse, grade Ayrshires, and many others that have blood stock. There are no stock horses in town. I believe horses are much higher than formerly, cattle some higher, but I cannot give the per cent.

9. The product of corn is about the same as ten years ago, as more attention is paid to this crop than formerly, but I think the aggregate production of the town is less than formerly; it cannot well be otherwise, considering the animal and vegetable products sold to distant markets, and no return made with the exception of grain for stock, and much land that was formerly cultivated is now allowed to grow to wood. The most noticeable failure is in pastures, many that formerly produced well being nearly worthless.

10. Most of our farmers attend the state and other fairs in the vicinity, but few make exhibitions except at our town fairs which are well attended, and pains are taken by nearly all to have something worth showing.

11. I think agricultural papers and books are liberally subscribed for, but a large part of farmers are content to follow the same methods of cultivation they were taught, and generally reject new methods without a trial, being averse to make experiments.

12. But few farmers keep farm accounts or could tell what was the cost of producing a bushel of corn, a barrel of apples, or a hundred pounds of pork. The manufacturer or merchant who would do business on the same principle would meet with utter ruin. But farmers are content to sow and reap, with scarcely a thought of whether it will pay or not, and if by some means they find out

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it does not pay, attribute it to the sterility of the soil, or the drought, or anything but their own lack of understanding their own business, and the best method of producing paying crops.

CANDIA.

1. General farming, orcharding, gardening, potatoes and hay are prominent. Farmers—J. Q. Cass, French Smith, fruit; J. R. Fitts, hay; J. W. Sargent, Benj. Cass, C. M. French, Francis Patten, Gordon Bean.

2. Crops, lighter than usual, except fruit, which was above the average.

3. Dairy products, fruits, stock, hay, wood and timber.

4. No farmers' club.

5. Grub and wire-worm; remedy, late fall plowing for former, and plowing in spring but once for latter. Other common insects prevail.

6. Superphosphate, poudrette, plaster, lime and ashes applied in hill, with results varying according to the soil.

7. All implements, with much saving of labor.

8. A few Short Horns and Jerseys, nearly full blood, also "Cream-pots."

9. No difference per acre, but less in amount, because less land is tilled.

10. Don't attend fairs generally; reason, they are humbugs and devoted to "horse-trots."

11. Take the agricultural papers and read some books.

12. Very few keep farm accounts and do not experiment much.

DEERFIELD.

1. No specialties. Potatoes, beef, pork and fruit are prominent.

2. Crops, lighter than usual; wheat and oats, about the average; barley, a failure; potatoes, one-third of a crop; corn, one-third; hay, two-thirds.

3. For farmers, apples and stock. Three manufactories for shoes.

4. A club. President, E. P. Chase; Secretary, H. C. Walker. Held no meetings the past winter.

5. Caterpillars to apple-trees; remedy, destroy their nests when the insects are just hatched.

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6. Superphosphate, plaster, and gypsum, applied to corn and potatoes.

7. Mowing-machine and horse-hoe.

8. Short Horns and Jerseys. One stock horse.

9. Larger on the average.

10. Generally go to fairs. Do not exhibit because expenses and trouble are more than receipts in premiums, etc.

11. Take the papers generally.

12. Do not know whether farmers keep accounts.

DERRY.

1. Some of the farmers in town are Col. G. W. Lane,—specialty, milk and pork; Harvey P. Hood, Joseph Montgomery, milk; Samuel Wilson, G. N. Proctor, fruit; John Folsom, milk and beef; Joshua Morse, George W. Dickey, George I. Choate, George W. Ballou, Cummings True, Lewis S. Morris, S. W. Parshley, W. H. Shepard, Henry N. Bullard, J. R. Clark, N. H. Brown, milk.

2. Crops for 1870: Hay, grain, corn, fifteen per cent. below average of ordinary years; potatoes, twenty per cent. below; fruit, largely above.

3. Milk and fruits: Milk sent to Boston by car, daily, (Sundays excepted in winter); daily production, four hundred cans; average price per can of seven quarts, about thirty cents, at depot; other sources of income limited in particular cases; large in aggregate.

4. H. P. Hood, President farmers' club.

5. No answer.

6. Plaster, leached ashes and superphosphate of lime, spread broadcast and in hill with good results.

7. New and improved implements generally introduced, resulting in great saving of manual labor.

8. Col. G. W. Lane has an Ayrshire bull and Chester county boar. No stock horses in town. But little stock raised. Careful selections of native cows are made for producing milk.

9. Products per acre of crops nearly the same as ten years ago.

10. To some extent.

11. To considerable extent.

12. Not sufficiently.

Probably a general improvement is going on by repairs of buildings, clearing fields and pastures, draining, etc.

A larger application of capital and labor is needed; pastures too

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much neglected; great losses in amount and quality of manures are allowed; not a sufficient number of teams kept to do the work required; too much hay sold from town; public roads not in satisfactory condition; farms too much sub-divided and partition fences not satisfactory; but little concerted action in introducing improvements; but little attention paid to appearance of portions of farms bordering on public roads.

Yet by comparison the farming interest stands well, and we hope to improve rapidly. Individual example is doing considerable to awaken an interest in improvements. The press and agricultural societies must do the rest.

EPPING.

1. Farming, gardening and fruit by J. C. Burley, J. F. Lawrence, S. P. Dow, Prescott Chase, J. L. Folsom, N. G. and W. L. Plumer, Daniel Dow.
2. Crops, below the average, excepting fruit.
3. Mixed agriculture, hay, fruit, gardening.
4. A good club. President, S. P. Dow; Secretary, J. B. Chase.
5. No canker-worms.
6. Superphosphates largely, with good results.
7. Mowers, rakes, plows, &c; great advantage.
8. No blood stock. Prices doubled in twenty years.
9. Not much change.
10. Attend county fairs, carry some stock.
11. Take papers generally.
12. Few farmers experiment and keep accounts.

FREMONT.

1. Alvah Sanborn, Sherburne Sanborn, Daniel C. Hooke, Ezra Currier, Benning S. Scribner, Horatio Beede, Phinehas Beede, Josiah B. Robinson. Attention given to general farm products and stock raising. No specialties. Geo. F. Beede, garden vegetables for market, seed potatoes, common farm products and stock raising.

2. Oats and small grain, about one-half the usual crop; potatoes, one-third; corn, nearly an average crop; hay, below.

3. Chief source of income, lumber and wood, not much from any other source; a trifle realized from stock, fruit and potatoes.

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4. No farmers' club and no material from which to organize one.

5. The maggot injures onions when we try to raise them; fine sawdust sprinkled liberally upon the rows just before they come up is the best known remedy. The cabbage-fly is troublesome. A preventive is to dust plants when wet with bone dust, ashes or plaster. Bugs on vines — protect with boxes and muslin top till plants get of sufficient size to resist their attacks, or, what is cheaper, take two sticks about two feet long, stick both ends in the ground, crossing over the hill, and cover with old newspapers; the plants will burst through and thrive finely, but should be thinned before covering. Common grub or cut-worm is plenty some years; dig out and kill. Borers are pests to our apple trees; little done to protect their ravages.

6. Bradley's and Croasdale's superphosphates of lime used to a limited extent; mostly applied in the hill for all tilled crops; no complaint but what they pay to buy and use.

7. Mowing-machines have been introduced; horse-rakes, with decided advantages. We average about an acre of grass per hour with machine and pair of horses.

8. One herd of Devon stock in town owned by Geo. F. Beede, consisting of ten cows and heifers, and one bull, all thoroughbred animals. Horses and neat stock have advanced full one hundred per cent.

9. Should think farm products were about the same as twenty years ago, potatoes may yield less, perhaps.

10. Our farmers have not made any exhibition of stock at fairs, have frequently shown farm products, generally attend fairs to some extent. There is not much stock worthy of exhibition; the expense and trouble of getting to and from the fairs, also the care while there, deters some from making an exhibition, no doubt.

11. A few agricultural papers taken, mostly weeklies; not many agricultural books read; one private library of some sixty volumes; not much brain work shown to improve the methods of cultivation; if there is any study it does not get to the surface, the soil does not receive the benefit of it.

12. A few farm accounts kept, and experiments made; when so kept and made we endeavor to profit by the results.

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KENSINGTON.

1. Stock-raising, hay and grain by Stephen, Joseph and J. W. Brown, J. L. Lamprey, D. G. York and T. K. Mace.

2. Corn, hay and grain, about the average; potatoes, below; fruit, abundant.

3. No answer.

4. A club. President, John A. Blake; Secretary, Charles E. Tuck.

5. No answer.

6. No answer.

7. Mowers and tedders; saving of labor.

8. Dutch, Devon, Jersey, Short Horn and Alderney.

9. Corn, greater; potatoes, less; grain, average.

10. Attend fairs generally and exhibit.

11. Take agricultural papers and read some books.

12. Do not experiment much.

KINGSTON.

1. Farm products and fruits, by F. Sanborn, Frank Spofford, R. B. Bartlett and Oren Smith.

2. Corn, barley and oats, average; potatoes, one-fourth crop; apples, four times the average.

3. Farm products, stock, manufacturing carriages and shoes.

4. No farmers' club.

5. Striped bug; remedy, slaked lime or sulphur.

6. Superphosphates and ashes — results good.

7. Mowers and rakes — much saving of labor.

8. Two Dutch bulls, one stock horse. Prices doubled in twenty years.

9. About the same.

10. To some extent.

11. Not so extensively as would be for their benefit.

12. Not generally.

LONDONDERRY.

1. Aaron P. Hardy, Wm. S. Pillsbury, Capt. Wm. Holmes and Matthew Holmes, hay, milk and apples; Col. J. Savory, hay, milk and onions; Reed P. Clark and John R. Emery, hay and stock; Gilman Farley, hay and potatoes; Samuel Boyce, stock and vegetables; Rev. Joseph Hayes, potatoes and grapes; Joseph Dickey,

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hay, stock and fruit; Charles L. Blood, apples, grapes and strawberries; Charles S. Pillsbury, stock, poultry, apples and peach trees.

2. Hay, 20 per cent. below an average crop; rye, good; corn and potatoes, 33 per cent. below an average crop; oats, light; fruit of all kinds, abundant.

3. Milk, butter, poultry, eggs, hay, apples, potatoes, sales of stock, wood and lumber and shoe manufacturing.

4. None in operation.

5. The many kinds of bugs that destroy vines. The most effectual means that is used to prevent their depredations is to take them between the thumb and finger and pinch them. Borers, caterpillars, canker-worms and cut-worms trouble but little in this town yet.

6. Plaster of paris and superphosphates, (principally Bradley's). Plaster is generally applied in the hill with stable manure, and is beneficial, especially for potatoes. Phosphates of lime, as articles of economy, are not to be recommended until other sources of fertilizing are exhausted. It is applied in the hill, and gives the crop a good start but does not carry it through till harvest time.

7. Mowing-machines, horse-rakes, horse-hoes and improved plows and harrows. Much manual labor is saved.

8. A few. John Avery, Ayrshire; C. S. Pillsbury, Jersey. A great many grades are kept of Devons, Short Horns, Jerseys and Ayrshires. The price of horses and neat stock has advanced about 150 per cent. Cyrus Nesmith, N. Londonderry, stock horse — breed, Cassius M. Clay.

9. Corn, about the same; potatoes, less. More good hay.

10. Nearly all attend. A few exhibit stock.

11. Yes.

12. Some do; not many.

NEWCASTLE.

1. Five men in all whose sole business is farming, one of which carries on market gardening.

2. Crops twenty-five per cent. below the average.

3. To farmers, farm produce; for others, employment at the Navy yard, the fisheries and shoe-making.

4. No farmers' club; not enough farmers to make it interesting.

5. Striped bug. Remedy, plaster or bone dust.

6. Sea-weed is chief manure.

7. None.

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8. Jersey and Ayrshire.

9. Corn and potatoes, less; hay and vegetables, better.

10. No farmers' fairs held hereabouts. Go to "agricultural horse-trots.

11. Do not take the agricultural papers or try experiments.

12. No.

SALEM.

1. Vegetables, hay and fruit, by Charles Kimball, D. M. Thom, Isaac Woodbury and John F. Smith.

2. Vegetables average less; hay, corn, oats and barley, above the average; fruit, abundant.

3. Hay, vegetables, milk, fruit, wood and timber, woolen and shoe manufactories.

4. No farmers' club.

5. Grasshoppers and crickets. Remedy, raise turkeys. Pumpkin bug and cabbage bug. Remedy, plaster and superphosphates sprinkled on plants when wet.

6. Superphosphates applied in hill with good results.

7. All farm implements. Saving of labor, and crops harvested much quicker.

8. Devons. One stock horse.

9. Products better than ten years ago.

10. Few attend the fairs, but complain it *does not pay* to exhibit.

11. Agricultural papers taken; few books read.

12. But few accounts are kept.

SANDOWN.

1. The leading agriculturists in this town are John Currier, John Sanborn, Ebenezer Hoyt, 2d, Robert Sanborn, Thomas Eaton, Carleton Cotton, True G. Sanborn, Andrew J. Currier, Hiram Fellows, James Griffin, William French and Smith A. Rowell. None of these make any particular branch a specialty.

2. The harvest of the various crops for the past year is as follows: Corn crop, about an average one. The various grain crops were more or less affected by the drought, and hardly came up to the average. There is but little wheat raised. Potato crop, about one-half that of ordinary years, in some parts of the town not more than one-third; hay crop, a little below the average; bean crop, ditto. The crop of fruit of all kinds was very large, especially apples, much exceeding that of ordinary years.

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3. Farmers derive their income, mainly, from the sale of lumber, hay, apples, and live stock. There are five saw-mills in town, the shares in which are mostly owned by farmers; these mills produce annually about one million feet of lumber, which generally finds a ready sale in Haverhill, Lawrence and Boston. But few farmers make a practice of selling hay, it being generally consumed on the farms. Several hundred barrels of apples have been sold the present year, at prices ranging from $1.50 to $2.00 per barrel.

4. There is no farmers' club in this town, and no steps have been taken to organize one, although there has been some talk on the subject. Do not think the prospect for organizing one the present winter very encouraging.

5. Caterpillars and borers injure fruit trees; squash-bugs attack the tender vines; the currant-worm infests currant bushes to some extent.

6. Bradley's and Croasdale's superphosphates are about the only commercial fertilizers used. They are generally applied to corn, potatoes, &c., in the hill. Some farmers think that about the only benefit derived from their use is to give the crops a start, while others contend that they add materially to the yield.

7. Mowing-machines have been introduced within twenty years. There are now twelve of these owned in this town. There are a few horse-rakes in use. In other farming tools there is not much improvement to be noted.

8. There are no kinds of blood stock found among our farmers. Prices of horses, neat stock, &c., have nearly doubled within twenty years.

9. The hay crop is not so large as it was ten years ago. Other crops about the same.

10. Many of our farmers attend the state and county fairs, but do not, as a general thing, make exhibition of farm products, and seldom of stock, for this reason: the fairs are generally held at some distance from this town, and the means of transportation to and from are limited. At the last county fair, at Kingston, the town team from Sandown comprised twenty-six yoke of oxen.

11. I answer this question in the affirmative. Among the papers taken are the "Mirror and Farmer," "N. E. Farmer," "Boston Cultivator" and "American Agriculturist."

12. I have no definite knowledge on this point.

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STRATHAM.

1. George Barker and Levi Barker, pears and grapes; John L. Jewell, general farming; Charles N. Healey, Mark F. Young, John N. Thompson, Leonard Lang, Wm. B. Lang, general farming and raising milk for market; James W. Rollins, general farming; John Emery, market gardening and strawberries.

2. Hay, good average; corn, good; potatoes, very light; grain, poor; apples, good crop; grapes, good; root crops, generally poor.

3. Milk to quite a number; hay to many; apples to nearly all; two saw and two grist-mills yielding quite an income; no manufacturers, quite a number of mechanics.

4. None; we had one years ago. I think I should not find zeal enough to warrant me in undertaking to organize one.

5. Canker-worms more than any or all others. Tarring is resorted to, to destroy them, and if faithfully done is efficacious.

6. Ashes, largely, for grass; superphosphate in limited quantities and with good results for tilled crops.

7. Mowing-machines, horse-rakes, hay-tedders, seed-sowers, horse-hoes. The advantages are, that crops are planted, tilled and harvested in proper season, and the constantly increasing scarcity of good help is supplied by their use.

8. C. N. Healey and G. W. Thompson have the Jersey, and J. L. Jewell a full blood Durham bull; horses and neat stock, I think, are no higher than twenty years ago compared with the times. Wm. G. Brown has a very promising Fearnaught stock horse, destined to rival his sire in speed.

9. Greater by ten per cent. at least, except in case, as this year of severe drought.

10. Not very generally, because jockeys control and absorb the funds, leaving the farmers in the condition of the sailor in regard to prize money, which is sifted through a ladder, and what lodges on the rounds is the sailor's share.

11. I think they do, as I am sure our farms are steadily increasing in fertility, and our farmers in refinement and intelligence.

12. Very much more than formerly, and I think profit by results. Much underdraining is done which, of course, must result in profit.

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STRAFFORD COUNTY.

BARRINGTON.

1. General farming and raising stock. Charles A. Foss, Wm. Hale, C. F. Buzzell, Daniel Boody, Wm. Peavey, Hiram Felker, Daniel Cater, Elisha Locke, Hiram Hall.
2. Crops, lighter than usual, except apples.
3. Lumber, wood, ship timber, and stock.
4. No farmers' club.
5. No answer.
6. Superphosphate, plaster or gypsum, sowed broadcast, have been used to advantage.
7. Mowers and rakes.
8. No answer.
9. Rather less.
10. Many attend the fairs but do not exhibit much.
11. Take mostly political papers. Farming is at a low ebb.
12. Do not know of any that keep accounts or try experiments.

DURHAM.

1. Benjamin Thompson, John Thompson, John B. Griffiths, William Woodman, J. S. Burnham, John Drew, Joseph Smith, James M. Pendexter, specialties, hay and apples; Samuel Chesley, George J. Wiggin, Thomas Wiggin, M. G. Woodman, John S. Woodman, N. S. Meserve, E. T. Emerson, specialty, hay.
2. Crops, rather below the average; apples, large crop.
3. Hay, apples and increase of stock.
4. No farmers' club.
5. Canker-worm; remedy, tarred paper. Borers; remedy, flexible wire in hole.
6. Superphosphates, broadcast, with good results.
7. All the improved implements.
8. Short Horns. Prices of stock nearly doubled.
9. About one-sixth less.
10. Do not attend the state fairs. Reason, want of good stock to exhibit.
11. Take the agricultural papers.
12. Do not keep accounts or try many experiments.

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MILTON.

1. General farming, stock raising and fruit. J. S. Applebee, Edwin Hunt, S. G. Chamberlin, Joseph Plumer, Charles Jones, Lewis Plumer, George Lyman, E. W. Plumer, Luther Hayes, Joseph Cook.

2. Crops, about as usual; potatoes, falling off.

3. Stock raising, lumber and wood.

4. No farmers' club.

5. No general complaint in regard to insects.

6. Superphosphates of various kinds in the hill. Result, about enough to pay expense.

7. All improved implements; saving of labor.

8. Short Horn; no stock horses.

9. Corn greater; potatoes, less.

10. Attend fairs some, but do not exhibit.

11. Take some agricultural papers.

12. No accounts in general, with the exception of the Plummers.

ROLLINSFORD.

1. Thomas Hodsdon, Wm. Plummer, Samuel H. Rollins, Andrew Rollins, Barton Wentworth, Leavitt H. Yeaton, Geo. Wentworth, John H. Wentworth, H. R. Roberts, Moses Roberts, Wm. R. Garvin and Frank Hale. I think none have made a specialty of any particular crop, but many of them raise sauce or truck pretty largely in connection with other farm products, and market milk.

2. In 1870 the eastern part of Strafford county suffered as severely, to say the least, as any part of the county. Corn was good; potatoes, one-third short; grain, one-third to one-half short; hay, one-quarter short; apples, abundant; other products, rather light, compared with years past.

3. The factories employ a large class of the people of this small town and are their principal source of income, the river being the state line. The Salmon Falls mills are in New Hampshire, and most of the operatives. The Quamphegan mill, one mile below on the same stream, is on the Maine side and most of the operatives in Maine. Have but few mechanics. The remainder is a farming population. Market milk largely. Six carts, heavily loaded, leave this town every morning for Dover, Great Falls and Salmon Falls.

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Beyond this, the cultivation of the usual farm products is their main dependence.

4. Organized a farmers' club about Christmas; met every week during the winter; rather interesting and good attendance for this small town; closed last Friday evening until September next; it is called the Rollinsford Farmers' Club. President, Leavitt H. Yeaton; Secretary, Joseph D. Roberts.

5. The common caterpillar is everywhere known, but we had none last spring. I don't like shooting the nest or using a torch, but take them in season and grind them up by hand with an old mitten on. We have fought the canker worms for two or three years and think they are played out, as few have been caught this spring. The most successful remedy here is the tarred paper or printer's ink. Grasshoppers are troublesome some years, but don't know where they are from or where they go. No remedy has been applied. Some have noticed a bug on the potatoes which they call a potato-bug; brown color; know nothing of its habits; no remedy suggested.

6. Superphosphates mostly, used generally in the hill for corn and potatoes; good to start the crop, but don't stay long in the soil. Some have sown broadcast and got tolerable grain, but not much grass after. Formerly used some guano, thought it did not pay well or did not know how to use it. We think the hay passed through the living machine is the most substantial manure and that makes more hay and more hay makes more manure, and that is the life of farming.

7. The mower ranks first and we could not do without it any way. Improved horse-rakes which have some advantages over the old ones. Hay-tedders have been introduced on some large farms; think they are liked. One or two horse-forks have been used in town; can say nothing of their benefit. The rotary harrow is thought well of by some who have used it. There have been improvements made in the ox-cultivator. I have never seen one that would cover manure so well as shoal plowing.

8. Very few. H. R. Roberts has Durham; Moses Roberts has Ayrshire; advance in price in twenty years, considerably more than doubled; within a year or more have fallen off a little. The same may be said of good horses; no stock horses in this town; we are not a fast people, don't go into fancy horses, but use team horses more than formerly and less oxen; very few sheep kept.

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9. Except 1870, which was not an average year, I think the crops have not varied much for the last ten years; perhaps hay and potatoes have not been quite as good the last few years; corn a little better; fruit comes every two years, sometimes plenty and sometimes very abundant.

10. They generally attend the county fair and make a good show of stock and all kinds of farm products and manufactured articles, but few attend the state fair or any other fair.

11. Many of them take agricultural papers and I think they read agricultural books; how much they study to improve their methods of cultivation I cannot say; I think it hardly possible to study agriculture and not improve the farming; something has wrought a change in the last twenty years in this town; there is among our farmers a more intelligent and systematic method of husbandry; success has followed, probably the result of agricultural reading.

12. Some keep a cash account, including all farm operations; not much experimenting in the way of farm crops, or they keep it to themselves if they do.

STRAFFORD.

1. Fruit and vegetables. General farming by R. B. Peavy; fruit, Cotton H. Foss; vegetables, C. F. Montgomery and Oliver Foss.

2. Crops, about the average; potatoes, light.

3. Stock and hay.

4. No farmers' club.

5. None very injurious.

6. Superphosphates are used to some extent.

7. All farm implements of improved patterns have been used, with saving of labor.

8. No answer.

9. Corn, greater; other crops, less.

10. Farmers usually attend the fairs.

11. Some take the agricultural papers.

12. Do not know of any who keep farm accounts, or experiment.

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BELKNAP COUNTY.

BARNSTEAD.

1. Reuben H. Copp, Eliphalet Locke, Samuel G. Berry, Thomas D. Langley, Thomas K. Proctor, William Proctor, Ira L. Berry, Joseph D. Proctor, Joshua W. Ayers, John K. Ayers, Enoch Locke, Jonathan Pickering, Joshua Ayers, William A. Jenkins, Joseph Jenkins, David E. Lougee, Oliver A. Dennett, Theophilus L. Brown, John E. Barker, Charles S. George, Andrew Marshall, Gilbert Tasker, Joseph Walker, George H. Cilley and George Colt are the most extensive owners of farms, but make no particular branch a specialty.

2. Grass, about two-thirds as much as usual; corn, full better than ordinary years; wheat, not more than half a crop; oats and barley, not so good as usual; potatoes, three-fourths of an average, but of very much better quality than usual,— no trouble with rot.

3. The chief source of income to farmers is from the sale of cattle, sheep, butter and wood; also, quite an amount of lumber from some parts of the town, there being a few farmers who own large lots of old growth pine lumber. Other classes are mostly engaged in making shoes for manufacturers in Lynn and of men's shoes from Farmington. There is also a large amount of poultry raised for market at good profit.

4. There is none in town. I will talk with the farmers in town in relation to the matter and see what their opinion is. There was once an excellent one.

5. I think there is no great trouble from any.

6. Phosphate and bone manure, generally applied in the hill, covered with a little soil. All agree that it is a great advantage to the crops. For a few years a good many farmers have been careful to save the droppings of the hen-roost, and it pays well.

7. The cultivator, horse-rake and mowing-machine. The horse-rake and mowing-machine, on the farms where they are used, are of very great advantage and dispense with more than one-half of the labor formerly employed.

8. The only full-blood, I think of, are Jerseys, owned by John Murphy and Frank Murphy. They breed some of them. There is some half-blood Dutch and Devon stock. The prices are about double what they were twenty years ago.

9. Not much difference.

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10. A good many of them attend the fairs, but what I have heard them express as the reason they did not exhibit stock or products was that there was too much management in getting premiums awarded to favorites, and those offered were nothing to the purses offered for horse trotting, and as none of them are breeders of fast horses they don't think it worth the trouble.

11. Many of them do.

12. I think not many of them, but know of some who do.

CENTRE HARBOR.

1. Stock, butter and cheese. Stock farms, J. C. Sturtevant, D. W. Coe, A. C. True, J. P. Norris, John Perkins, H. T. McCrillis, Daniel Davis, Amos Webster. Dairy farmers, B. H. Eastman, J. L. Merrill, I. Davis, Noah Smith.

2. About two-thirds crop.

3. Raising of cattle and dairy products, and taking summer boarders.

4. No farmers' club.

5. No answer.

6. Very little if any used last year.

7. Very few improved implements, as this is a rough, old-fashioned farming town.

8. Very little blood stock in town; a few Durhams; no stock horses.

9. About the same.

10. Do not attend fairs. Reason is — "we are behind the age."

11. Take agricultural papers, but very few books are owned or read.

12. Do not keep farm accounts or try many experiments.

GILFORD.

1. Our farmers on the mountains and hills make sheep a specialty — William Weeks, Thomas Weeks, William H. Weeks, John H. Weeks, James R. Morrill, George W. Morrill, Harrison Morrill, Levi D. Sawyer. Those that live on the low lands raise neat stock — Geo. W. Sanders, J. J. Morrill, Emmons M. Brown, John Smith, Simon Rand, Philip O. Blaisdell, Richard Dame, G. W. Leavitt, Isaiah Morrill, Levi Grant, Richard Frohock.

2. Corn, an average crop; grain, about two-thirds crop; potatoes, half a crop; fruit, more than average crop; hay, about three-fourths of a crop.

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3. The income of most farmers is from stock raising; there are three or four that raise milk for Laconia and Lake Village markets; the source of income of most other classes is manufacturing.

4. There is no farmers' club in town.

5. Borers and wire worms. This year there is a worm that has been very destructive to cabbages; there is no particular pains taken to destroy them, only the borers; we cut them out with a sharp knife.

6. Superphosphate of lime is used to some extent, usually with satisfactory results; plaster of paris is also used. Both are usually applied in the hill.

7. Mowing-machines are quite common; horse-rakes are not used so much; many object to them because they rake up so much dirt.

8. I think not. All kinds of stock have doubled in price within twenty years.

9. Many farmers have been improving their farms, and I think that crops are generally better than they were ten years ago.

10. We have no county fairs now; when we did we made good exhibitions of stock; usually took the premiums; don't exhibit at state fairs, too far off.

11. Agricultural papers are very generally taken, but few if any study books.

12. Very few may keep farm accounts, but it is not generally practiced.

GILMANTON.

1. Raising stock, produce, dairy products, Chester County hogs, and grain. Thomas Cogswell, dairy, hay and stock; Moses Hayward, Chester County hogs and dairy; George Montgomery, stock and hay; Joseph B. Durrell, sheep; Chas. G. Kelley, hay and grade Devons; James W. Cogswell, hay, wheat, corn and horses; Noah E. Smith, horses; Freeman Nelson, fruit.

2. Crops, light; potatoes, one-fourth; fruits, very abundant.

3. Sale of stock, dairy products, berries, hay, hogs, and grazing.

4. A farmers' club — President, Moses Hayward; Secretary, J. D. Nelson.

5. Caterpillars are very injurious to fruit trees; grasshoppers; remedy, keep turkeys!

6. Superphosphates of various kinds are used, applied in the hill, with various results.

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7. All improved implements are used, mowers, cultivators, rock-lifters, stump-pullers, &c.

8. No full-blooded stock, except Chester white hogs; many fine grade Durhams and Devons; two stock horses, "Black Hawk" and "Honest Allen." Prices doubled.

9. Less by one-eighth.

10. Attend very well considering distance to state fair. Have held town fairs. A general interest is manifested in agriculture.

11. Many agricultural papers are taken and various stock journals. Farmers are improving their land and methods of cultivation.

12. Do not keep accounts generally, but are commencing the practice. A large majority of the inhabitants are farmers, and are intelligent and industrious.

CARROLL COUNTY.

CHATHAM.

1. General farming, by Daniel Chandler, Bliss Charles, J. C. Eastman, Seth Wyman, Walter Pillsbury, M. C. Clay, Samuel Knox, jr., James Morrison, E. Weeks, J. H. Weeks, Jesse Thomas, Cyrus Binford, I. E. Clay.

2. Crops, about the average; fruit, abundant; hay, oats, peas and beans, less.

3. Raising neat stock, sheep and horses. Quite a business in lumbering.

4. No farmers' club.

5. Weevil in wheat.

6. Superphosphate, lime and plaster, applied in hill for corn and potatoes.

7. Mowers, rakes, plows and cultivators.

8. No blood stock.

9. No change perceptible.

10. Attend the fair, usually.

11. Many of the farmers take the papers.

12. No account kept or experiments tried that we know of.

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EATON.

The agricultural interests of our town are rather low, and it seems that nature designed that it should be so, as mountains, hills and valleys make up the extent of our limits. We have few profitable farms, and fewer "wide-awake," devoted disciples of Ceres. The soil, however, is good, but generally stony and of uneven surface, better suited for grazing than for tillage.

1. We cultivate a variety of products, but perhaps a few names can be set down with specialties, as follows: Benjamin M. Glines, Henry Thurston, wheat; Robert Robertson, corn; Dana Allard, potatoes; Wendall S. Foss, hay.

2. The drought of the last season was and is the severest ever known in this region. But still, even this year we have had the promise of "seed time and harvest" verified unto us. Moist, deep, mellow-soiled fields produced a full crop, while other spots less favored were almost an entire failure. Perhaps it will be safe to set hay two-thirds of an average crop; corn, wheat, rye, oats and beans a little less; potatoes, about half, and apples, a very bountiful crop. For the last fifteen or twenty years oats have generally been sown instead of wheat, except on the most elevated farms.

3. Our chief exports are beans, butter, poultry, hemlock-bark and neat stock, which latter thrives well here; brought high prices for several years previous to the last two, and is the source of our greatest income. Times begin to look hard now; stock has declined thirty per cent. or more, except fat cattle and fancy horses; we have a big war debt for us to pay; tax this year a little more than four per cent., while we pay only $3,000 on our debt of about $20,000. The most interesting feature in town is the doings of a family of Snows, father and three sons, all naturally mechanics. These have kept together like a "bundle of sticks," co-operated, and, by the aid of a small water power, have built up quite a tasty little village, carrying on a grist and saw-mill, cabinet works, stone-cutting, coopering, blacksmithing, etc., and farming also.

4. We have no farmers' club in town, and it is doubtful if one could be formed and maintained successfully. The majority of our farmers are contented to do as "father's father did," and perhaps profit some by their own experience.

5. We are not much troubled with insects. We had some worms and caterpillars; the latter were very numerous a few years ago, but they are few now. The darkish colored grub-worm

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does some damage by cutting off young tender plants, especially beans. The redish, slender, hair wire-worm is also somewhat troublesome to corn and potatoes. The large white dung-worm has been quite numerous in some places of late years, and, perhaps, is the worst enemy of any we have. They injure grass, corn and potatoes. I have seen a few spindle-worms in young corn. We find wood ashes applied to the hill at planting and after the plants are up to be good.

6. Our farmers do not use commercial manures to any extent, nor do they save and make about their stables what they might easily do. Many throw stable manure out under the eaves to drench in the rains and bleach in the sun. I know of one man who used a barrel of superphosphate in the corn fields to good advantage and profit. I forgot to state that plaster had been used here for many years with various results.

7. There has been but little change in implements for farming for the last twenty years. Plow, harrow, cultivator, hoe, scythe, rake and pitchfork, are the tools we use mostly. Some of our boys get tired of using them and find their way to the more favorable soil of the West, while others go to our cities. Some succeed in business, and some come out at the "little end of the horn." Most of our hills are too rough to use the mowing-machine.

8. Our stock is native, with mixture of three or four different kinds. Some three years ago the price of horses and neat stock more than doubled what it was twenty years ago. Good horses and fat cattle have not fallen off much in price, but others have as before stated.

9. Our products have not varied much in yield within the last ten years, when the seasons have been alike. The hay crop the two years preceding the last was unusually good. It seems that the hay crop must gradually fall off from year to year as there is much grass land "binding out," that is too rough and stony to cultivate.

10. We have no county fairs near us in this state. The Oxford County Fair, held in Fryeburg, Me., about twelve miles distant, is attended by some of our townsmen, but rarely to exhibit anything. Some five or six years ago there were a few annual fairs held at Ossipee in our county, but were discontinued, probably for want of interest and good management.

11. Perhaps former hints make it unnecessary to say much here. A few agricultural papers are taken in this town. I have tried

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to be truthful; would have been glad could I have given a more interesting report; hope, however, that we shall not "despise the day of small things" and suffer our poor prospects to discourage us. And while I heartily wish success to agriculture and its improvements everywhere, please allow me to express the hope that other themes also may engage the attention of the great, the good, the wise and eloquent of our state. Education, intemperance, treatment of animals, are all crying for redress. Even the latter, so little spoken of, has often touched my sensibilities. Is it not cruel that the noble, faithful horse, after his best days are past, should be bought, sold, beat about and starved to death by a set of hard-hearted, inhuman wretches? Would that "voices and thunderings" might be heard and obeyed from the press, the pulpit, stump and forum against this sin! Would that there were more Henry Berghs in our land.

SANDWICH.

1. General farming and raising stock.
2. Crops about the average; apples abundant.
3. Farm products and stock. Mr. McCrillis made in 1869, $700 from summer boarders; $400 on stock; $200 on pork; $200 on sugar; $200 on butter; $200 on fruit, and $200 on hay. Another man is said to save $1000 a year from his farm.
4. No farmers' club. "We old fogies wont learn."
5. White and wire-worm, bee-moth and borers; very little is done to prevent their ravages; the skunk and crow destroy them, and we destroy these in turn.
6. Commercial manures are but little used; opinions are that they are like liquors, stimulate at first but leave the ground weaker.
7. All improved implements are used.
8. Devons are best adapted to our soil.
9. About the same, but hay is less.
10. Very few attend the fairs and rarely make exhibitions.
11. Very few take agricultural papers.
12. Farm accounts are kept to some extent, but very little experimenting done.

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TAMWORTH.

1. Hay, oats, potatoes, corn and wheat, by J. M. Shackford, H. C. Burbank, Stephen Kenerson, B. S. Kent, Samuel Littlefield and others.

2. Crops all fall short about one-third from previous years; potatoes, one half; wheat, as much or more.

3. Raising cattle and horses; lumbering.

4. No farmers' club.

5. Grub-worm and a large white worm are the pests here. Know of no means of their destruction.

6. None used.

7. A variety of improved implements are used with satisfactory results, especially the stone and root-digger and bog-cutter.

8. No answer.

9. Corn and oats, about the same; potatoes and wheat fall off.

10. No answer.

11. Take the papers to some extent but very limited.

12. No answer.

TUFTONBOROUGH.

1. Raising of horses, farm products and cattle. D. D. Wingate, horses; J. B. Henry, cattle; John Hurly, cattle; and general farming.

2. Crops, except wheat, rather above the average.

3. Stock raising is the general income.

4. No farmers' club.

5. Grub and cut-worms; striped and pumpkin-bug. Very little efforts are made for their destruction.

6. Superphosphates take the lead, applied in the hill for corn and potatoes on damp soil. Result, crop doubled.

7. Several improved implements have been introduced and have given satisfaction, especially mowers and plows.

8. A few Short Horn Durhams and Ayrshires; some fine horses also in town. Prices have doubled in twenty years.

9. Rather less on the whole.

10. Only one or two attend fairs; reason, lack of interest.

11. Many take agricultural papers, but are slow in trying experiments.

12. About one in ten keep farm accounts, but do not go into particulars.

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WOLFEBOROUGH.

1. General farming, by J. L. & A. D. Avery, A. W. Banfield, W. H. Jones, Moses Varney, J. L. Meade, Elisha Goodwin and Thomas L. Whitten.

2. Crops, about the same; apples, abundant.

3. Farm products, maple sugar, neat stock and horses.

4. No farmers' club.

5. Weevil in wheat; nothing done to prevent them. Borers; cut them out. Cabbage-worms; nothing done to prevent them.

6. Superphosphates and plaster in the hill, for corn and potatoes, with good result.

7. Mowers, rakes and hoes are all being used with good results.

8. Jersey and Durham neat stock; one very fine stock horse. Prices have doubled in twenty years.

9. Products are less than ten years ago. More hay and corn are raised.

10. Some few attend the state fairs.

11. There are many agricultural papers taken in this town.

12. Very few keep farm accounts and try experiments.

MERRIMACK COUNTY.

ALLENSTOWN.

1. General farming. Geo. W. Ela, Samuel Kenerson, Elias Ames, Henry Dowst, Norman Call, John Tennant, W. D. Marden, Josiah Clifford, Wm. Parker.

2. Crops, one-third less than the average; potatoes, a half crop.

3. Stock-raising and lumbering.

4. No farmers' club.

5. No answer.

6. Superphosphates are used with varying advantages, though good results; some think stalks grow more than grain.

7. Mowers are used and nearly all implements to advantage.

8. Jersey, stock mostly natives.

9. About the same.

10. They very generally attend fairs and make exhibitions.

11. Take agricultural papers.

12. Some keep accounts, though not many.

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CANTERBURY.

1. General farming, stock, wood and lumbering. D. M. Clough, Joseph Ayers, P. C. Clough, A. Clough, D. M. Morrill, Joseph Morrill, E. Osgood.

2. Crops, below the average; potatoes, half; other crops, about two-thirds usual amount.

3. Farm and dairy products, wood, lumber, and stock.

4. A good working farmers' club; has weekly meetings which are well attended; President, E. Gale; Secretary, S. C. Moore.

5. Wire, white and grub-worm; black and yellow pumpkin-bugs. No means taken to destroy these only by hand.

6. Many kinds are used, mostly in hill of planted crops, with good results.

7. All kinds of improved implements are used, with satisfaction.

8. Some Devons and grade Durhams; some full-blooded Ayrshires, especially by the Shakers. Arthur Clough has a good stock of Devons.

9. Crops, about the same on the average.

10. Attend fairs and exhibit some as formerly.

11. Take agricultural papers and are interested in books on agriculture.

12. Few experiments are made, but not with any great satisfaction.

CHICHESTER.

1. Charles H. Carpenter, Stephen Perkins, Thomas Berry, S. Ambrose Brown, William Lake, Moses R. Lake, Samuel W. Langmaid, Jonathan C. Reed, all engaged in general farming, and raising general field crops, stock-raising, and orcharding. Mr. Reed has upwards of one thousand rods of superior stone underdrains, done by his own hands.

2. Hay fell short, full thirty-three and one-third per cent. in some localities, and not over ten per cent. in others. On an average, the hay crop in this town is estimated at twenty per cent. less than last year. Corn is full twenty-five per cent. less than the average for ten years past. Wheat is, at least, rather better than the average for some years past. Rye, oats and barley, peas and beans full average crops. Apples, pears and other small fruits, plums and berries, an immense crop, not equalled since the year 1860.

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3. The sales of neat stock, pork, poultry, apples (green and dried), and the surplus of general field crops, loaning money and paying business such as can be obtained; for other classes may be mentioned the trades incident to agricultural sections, the manufacture of carriages, shoes, and iron wares.

4. We have not.

5. Weevils are the most injurious to wheat. Worms are the most injurious to corn and grass and somewhat injurious to grain. Nor must the injury done to grass and grain, caused by grasshoppers, be forgotten. No measures of importance are taken to destroy them or mitigate the damage done by them.

6. Phosphate of lime and plaster of paris are the most important commercial manures. They are used in planting and in the hill, the phosphate of lime being slightly covered with earth. It is generally admitted that the advantages derived from them fully compensate for the original cost of said commercial manures.

7. Mowing-machines and improved horse-rakes have been introduced. Mowing-machines and horse-rakes supersede the necessity of the same amount of help as was formerly required. A decided improvement is visible in all farm implements as having taken place during the last twenty years.

8. No blood stock is found among our farmers. Horses are at least fifty per cent. higher than twenty years ago. Neat stock is at least one hundred per cent. higher than at the aforesaid period. The prices of sheep and swine remain very much the same as then.

9. The product of corn, potatoes and other farm products is very much the same per acre as it was ten years ago. No difference is noticeable.

10. But few except those who have axes to grind. The reason why more farmers do not attend state and county fairs is on account of horse-racing being the leading feature of fairs, to say nothing of the monstrous falsehoods in regard to the age of stock entered; nor must the manner of packing the committees and awarding the premiums, be forgotten.

11. They do.

12. They do to a considerable extent.

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CONCORD (EAST).

1. Rufus Virgin, Joseph Graham, Charles Graham, J. L. Tallant, J. G. Tallant, Aaron Tay, John B. Sanborn, Frank P. Virgin and J. T. Hoyt. These men are all good farmers but do not make any crop a specialty. The most of their general crops are wheat, corn, potatoes, rye, hay, barley, oats, etc., with considerable fruit.

2. Fruit, three times the usual amount; potatoes, one-half a crop this year. All the others named above are one-third less than usual on account of the severe drought the past season.

3. The income is from cattle, crops, butter, cheese, lumber and wood.

4. There is no farmers' club.

5. Cabbbage-worm, grub-worm, wire-worm and bugs of different kinds; no very great means have been taken to stop them. This is the first season of the cabbage-worm.

6. Plaster paris, lime, superphosphate of different kinds, ashes, hen manure, etc. Plaster is largely used and is the cheapest and most reliable on our dry soil. We use one and one-half or two tons a year, applied in the hill. Success depends on soil and season; generally one-third increase in crop on the right soil.

7. Mowing-machines — the Wood's, I think the best; cultivators of different kinds; plows, the Doe being greatly used, made by W. P. Ford and T. H. Ford, Concord, N. H.; carts, corn-shellers, horse-rakes and many other very useful tools The result is, the work on the farm can be done with one-third less hard labor, and as well as formerly.

8. Yes, various kinds. John B. Sanborn, Esq., has a good stock of full-blood Devons, one-half blood and full-blooded South Down sheep, good swine, turkeys, etc.

9. The product of potatoes, corn and farm products, is all of one-fourth less than ten years ago on the same ground, I think, by actual observation; more manure is needed.

10. Farmers in this vicinity generally attend state and county fairs, and exhibit stock and farm produce. Perhaps you have noticed that East Concord generally takes the first premium on best town team of ten yoke of oxen.

11. The farmers take agricultural papers, and have improved the method of cultivation of their farms slightly.

12. Farmers do not generally keep account of crops in particular.

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Mr. Rufus Virgin keeps account of debt and credit, and can tell everything paid out and received, but not strictly a farm account.

DUNBARTON.

1. Daniel H. Parker, grain, grass and stock; Deacon Samuel Burnham, swine, poultry, onion culture and gardening; William C. Stinson, stock, fruit, grass and grain growing; David Story, sheep, neat stock, fruit, grass and grain; Ryder Brothers, swine, neat stock, horses and lumbering; John C. Ray, Esq., trader in horses and cattle, grass, grain, fruit and potatoes; George O. Waite, neat stock, fruit, grain and blacksmithing; L. & O. P. Wilson, dealers in groceries, dry goods and fruit culture; J. P. Jameson, blood stock, fruit, grain, sheep, horses, and the culture of the cranberry.

2. Hay, about two-thirds the usual quantity; garden produce very light; cranberries, not any, the crop a failure; corn, rather light. All other crops, an average or about it.

3. Dairy — milk, butter and cheese; fruit — apples, peas, peaches, plums, grapes and cranberries; grain — wheat, rye, barley, oats and corn; stock — horses, cattle, sheep, poultry and swine; hay, wood, lumber and speculation; mechanics — blacksmiths and carpenters.

4. We have not, but hope measures may be taken to organize something of the kind. We may rely upon our "*Secretary*" to put the wheel in motion.

5. Grain (wheat),— the weevil or red midge; nothing known to prevent the injury they do. Fruit (apples),— the caterpillar, web-worm and borer; remedy, destroy the nests when small. Corn,— the cut-worm, trooper and wire-worm; remedy, lime or plaster. Garden vines,— the pumpkin-bug and bean or cut-worm. Onions,— the maggot; remedy not known in this vicinity. Cranberries,— the cranberry-worm.

6. Superphosphate of lime, used in the hill; the result satisfactory. Lime and plaster, used in the hill; the effect is good. Guano and wood ashes, used in the hill, which pays. Also, swamp muck composted with loam and barnyard manure is used to some extent and is said to be a good investment.

7. Mowing-machines, hoeing-machines, threshing-machines, corn-shelling-machines, wood sawing-machines, apple-paring-machines and a thousand and one other patent machines, to say noth-

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ing of the ladies' sewing and knitting-machines, each having superior advantage over the method of doing work as it was done twenty years ago.

8. Blood stock — Harris E. and C. G. B. Ryder, Devon; John C. Ray, Esq., Devon; E. P. Marshall and Wm. P. Burnham, Durham; Charles Clifford, Dutch; J. P. Jameson, Jersey. Advance in price, 100 per cent.

9. Corn, yield per acre greater than ten years ago; potatoes, less; wheat, less; oats and barley, greater; beans and peas, greater; hay, greater; fruit, greater.

10. Some do, and others do not. The Durham, Devon and Jersey stock have been represented at the fairs and received a good share of the premiums awarded in those classes. Those that do not exhibit usually attend one day and return well satisfied if they do not say as much.

11. Agricultural papers are taken and read by our people, with books of different authors upon the exhaustless subject of tilling the soil. Rivalry in growing large crops seems to be the order of the day. The cause of this may be attributed to information gained by reading and attending our state and county fairs.

12. Several of them do. They purchase a diary the first of January each year and keep a debt and credit account each day of the year; also a minute of each experiment they make, with the result attending it; note the weather and its effect upon the several crops they happen to be specially engaged upon, with the current events of the day. The profit attending experiments are sometimes upon the debt and sometimes upon the credit side of the book.

EPSOM.

1. No answer.
2. Crops were lighter than usual.
3. Stock raising.
4. No farmers' club.
5. No answer.
6. Superphosphates in the hill with good results.
7. Nearly all implements with saving of labor.
8. Jerseys. Horses have doubled.
9. Crops are greater by the acre.
10. Farmers generally attend fairs but do not exhibit. Reason, too much trouble for the profit.

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11. Take some agricultural papers.

12. Accounts or experiments not generally kept or tried.

FRANKLIN.

1. Mixed farming, wool and milk. Wallace Burleigh, hay, corn, potatoes, beef, pork, mutton and wool; B. S. Hancock, general farm crops, wool; George B. Matthews, general farm crops, beef, pork, garden truck; L. D. Stevens, general farm crops, beef, pork, mutton, wool; L. D. Davenport, general farm crops, beef, pork, dairy, wool; Joseph Fellows, general farm crops, beef, pork; N. M. Colby, George S. Pike, Edward Colby, general farm crops; Wheeler Eaton, general farm crops, mutton, wool; John L. Kelley, general farm crops, milk; Leonard Gerrish, general farm crops, horses.

2. Crops, about the average; hay, oats, potatoes and beans, below; fruit, above.

3. Wool, wood, bark, lumber, produce, dairy products, manufacture of paper, flannels and other goods.

4. A farmers' club,— President, L. D. Stevens; Secretary, Wallace Burleigh.

5. Have none that are not found in other towns.

6. Gypsum, superphosphates, lime, ashes, guano, applied generally to hoed crops; results, good.

7. Improved implements are the order of the day here, saving half the labor.

8. Durhams, Dutch, Jerseys, Ayrshires; American Merinos Cotswold, South Down sheep; Chester County hogs and Suffolk.

9. No change of any account.

10. Farmers usually attend but do not exhibit much. They do not believe in fast horses.

11. Most of the farmers take agricultural papers.

12. Very few, if any, keep farm accounts.

HENNIKER.

1. Harrison A. Rice, Hiram Rice, George W. Rice, raising stock, Durhams being their choice; A. D. Connor, L. T. Connor, Durham and Dutch; James B. Brown, Ayrshire and Devons; Moses Colby, Devons; Robert D. Rice, Edward B. Whitman, Benjamin F. Clark, Durhams and Devons; Nahum Colby, Lewis Colby, Dur-

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hams and natives; Harrison A. Gilmore, Devons; Micajah Peaslee, Durhams; Harris Campbell, John C. Ray, Edward G. Clark, Chester county swine; Warren S. Childs, Durhams and natives.

2. Hay crop averaging throughout the town about two-thirds of a crop compared with the last five years; corn crop, about two-thirds; potatoes, light, averaging three-quarters of a crop in some localities and one-half in others; oats, three-quarters crop; rye, full crop, and wheat, very light, not more than half a crop. Straw of all grains was abundant but not well filled.

3. The chief income with our farmers, as a class, is dervied largely from raising stock. Some, quite a number, have quite an income from their orchards. The income of other classes is mainly derived from trade, manufacturing of various kinds and "speculation." The latter class are few in this town, our population being generally a hard-working, honest people.

4. There is no farmers' club in this town. There has been talk at times of organizing one, but it has generally ended in nothing being done. Agricultural matters are more generally discussed whenever a few are gathered together than in former years.

5. Caterpillars and fall worms do much injury to our fruit trees, and are generally destroyed by burning their nests with some quick light. Black and striped bugs do much injury to vines. No remedy was sufficient to prevent their depredations the past season. The borer has done some injury to fruit trees, but of late years has nearly disappeared.

6. Phosphates are largely used, becoming more general every year. But little guano is now used. Phosphates are generally used in the hill, giving the corn and potatoes a quick start. Many farmers use a composition of plaster, ashes, hen manure, lime and salt, and find it very beneficial where the soil is not too moist.

7. Mowing-machines; several harrows, all doing their work much better than the "spike-teeth" machines for sowing various root seeds; and improved threshers, mostly being impelled by water power in this town; improved plows of various kinds, doing their work neatly and thoroughly.

8. This question is answered largely under the question marked No. 1. Although a good deal of care is taken with horses, still we have no full-blooded stock horses. Prices for all kinds of stock are higher than twenty years ago, though not as high as war prices.

9. With the same culture the yield is not greater than ten

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years ago, but now farmers generally are adopting the system of manuring and tilling well what they do cultivate. Greater crops from the same amount of land are thus raised, amounting in some cases to an increase of from ten to forty per cent.

10. A large majority of them attend fairs for the same purpose that they used to attend musters, "to see and be seen." They exhibit but little, having little faith in them as generally managed.

11. Our farmers are as a class great readers; a large number of agricultural papers are taken by them, and pretty thoroughly discussed; but few agricultural books, save now and then. Our farmers are fully up to the average of other towns in improved methods of cultivation.

12. A great many keep a thorough account with their farms, and they make many experiments, but not with much profit. Others keep no account at all, and probably our farmers will average as fully as in other towns in not being able to state what a bushel of grain, potatoes or roots have cost them. A systematic course of farming is needed here as well as in all other parts of the state.

HOOKSETT.

1. General farming. Natt and W. F. Head, W. P. Farmer, John H. Rand, M. L. Otterson, Josiah Clark.

2. Crops, about the average, except potatoes which were about half a crop.

3. Products of the farm, milk, etc., brick-making and manufacture of cotton goods.

4. No farmers' club.

5. Cabbage-worm and bugs. Not much done to destroy them.

6. Superphosphates are used to advantage in the hill.

7. Mowers and rakes are used and give satisfaction.

8. No answer.

9. About the same as ten years ago.

10. Farmers usually attend fairs and exhibit.

11. Take papers and read agricultural books.

12. Farm accounts not kept or many experiments tried.

LOUDON RIDGE.

1. Potatoes, corn, neat cattle, maple sugar and grain by J. S. R. Brown, B. H. Kenney, L. F. Sleeper and J. F. French.

2. Crops, generally below the average; corn, above, and fruit, abundant.

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3. Sale of hay, neat cattle, raising stock, swine, sheep and poultry.

4. A farmers' club at Loudon Centre; President, J. J. M. Tenney.

5. Weevils in wheat; remedy, very early or late sowing.

6. Superphosphates applied in the hill on corn; result, various. Ashes, bone manure, etc., are also used. Poudrette has been tried but not satisfactory.

7. Horse-rakes and mowers, with advantage.

8. Little blood stock; some Durhams and Devons. Prices have advanced one-half in twenty years.

9. About the same.

10. Farmers do not generally attend.

11. Agricultural papers are read but not books.

12. But few keep accounts or try experiments.

NEWBURY.

1. Coggswell & Johnson, stock and produce raisers and lumber men; Daniel Morse & Son, stock and produce raisers, such as corn, potatoes, wheat, rye, oats and barley,—these are the principal varieties though there is quite a quantity of butter made in the town; Nathaniel Baker, John Farmer, W. H. Sawyer, Ezra Cilley, Osman Bailey, Curtis Messer, Moody Gillingham, Silas W. Dana, Alfred H. Nichols, F. S. Mussey, Hiram B. Cheney.

2. Our hay is the principal crop for our town, which was about two-thirds in 1870 of our usual crop. Potatoes are a special crop with us and we raise a large amount of excellent ones for the market; the farmers raise from one hundred to two thousand bushels a year each; not over half crop the past year. Wheat is raised with most of the farmers; ten bushels to the acre is the usual crop, though I have raised thirty-five. Corn is a good crop with us generally; with high culture can raise fifty bushels to the acre; fair the past year; about the usual crop from thirty to fifty bushels. Oats and rye, not very extensively raised; oats, we got from twenty to thirty bushels per acre; very good the past year. Rye is but little raised. We have a good supply of apples generally; a large crop the past year.

3. Farm produce, maple sugar, wool.

4. No farmers' club.

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5. Caterpillars; remedy, sweep them down in a damp, cool morning. Cabbage-worm is troublesome.

6. Plaster of paris applied in the hill.

7. Improved implements; all work well and give satisfaction.

8. Mixed breeds.

9. No material change under the same cultivation.

10. Farmers usually attend but do not exhibit.

11. Nearly all the leading papers are circulated here.

12. Think there are not many accounts kept or experiments tried.

SALISBURY.

1. General farming, sheep-raising, stock-raising, grain and pork. Jacob Chase, I. N. Sawyer, Isaac Sanborn, D. S. Piper, A. C. Pettingill, Garland Calef, W. H. Moulton.

2. Crops, lighter than usual; apples, abundant; quality of products, good.

3. Industry and economy are the chief sources of income with us; no profit but a fair living now.

4. No farmers' club; two debating societies; will move for a club.

5. Grub-worms are troublesome; borers are pests; also onion-maggots. The cabbage worm is also a pest.

6. Superphosphates are used some in the hill for corn and potatoes, producing better crops than stable manure.

7. Decided advantages are experienced by the use of improved implements.

8. Very few pure bloods; many grades of Durhams and Devons.

9. Products are generally better than ten years ago.

10. Farmers attend the fairs some, but do not exhibit much; too expensive.

11. Take some agricultural papers.

12. Some try experiments and profit from them; do not keep farm accounts.

SUTTON (NORTH).

1. Francis Robbins, potatoes, dairying, etc.; M. B. Wadleigh, potatoes, sheep, etc.; J. B. Nelson, stock-raising, etc.; G. S. French, sheep; C. A. Fowler, sheep and potatoes; M. Moody and M. C. Morrill, stock-raising; J. D. Prescott, potatoes, etc.

2. Crops less than usual.

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3. Stock, potatoes, lumber and small wood manufactures.
4. No club.
5. No answer.
6. The phosphates are used.
7. Improved implements are adopted.
8. No blood-stock; some good sheep.
9. About the same.
10. Some attend fairs, but do not exhibit because it don't pay.
11. Farmers take agricultural papers.

WEBSTER.

The town of Webster, being an offset from old Boscawen, is not extensively known to outsiders. There is, however, such a place situated about a bomb-shell shot distance southeast from the base of Kearsarge mountain, on the Blackwater river, and has the charge of sustaining six bridges arching that stream, one store, one grist-mill, six saw or shingle-mills, a circulating library, a lyceum, three meeting-houses and the senior minister of the state, and one doctor. It has a good water power but not grown into very great importance outside of its own borders. The iron horse, it is hoped, will soon have a track through the town, shortening and rendering the grade of the Northern railroad easier, the route having been already surveyed.

1. H. L. Dodge, Charles Glitten, J. D. Sanborn, John Sanborn, dairying, raising young stock; Albert Runals, sheep, neat stock, and lumber; J. C. Pearson, F. B. Sawyer, Joseph Couch, sheep and cattle; G. T. Sanborn, fowl breeding; F. L. Burbank & Son, W. W. Austin, A. C. Sweatt, sawing lumber; Smith & Sweatt, trading; H. & J. L. Gerrish, strawberries, potatoes, and lumber; F. F. Fisk, milk and honey; Peter Stone, H. G. Stone, fruit; Dr. N. H. Arey, grapes; grass and grain an object of all.

2. Hay and corn, about two-thirds of an average crop; wheat and oats, sixty per cent.; potatoes, less than a half crop; garden vegetables, almost a failure; apples, fifty per cent. above the usual quantity.

3. The sources of income are sheep, wool and cattle, pork, butter and cheese, apples, potatoes, some wood and lumber; a little of anything which can be sold from the surplus products of mixed farming on a small scale.

4. A farmers' club was sustained one or two seasons, no ses-

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sions held now. The methods of farming throughout the town are so much alike, that the new facts brought to light were not of sufficient importance to compensate for time spent in meeting. Much of the agricultural writing and speaking,—coming as it does from half unpractical or four-square-rod farmers, and partaking of so much of the cheese in the moon speculation,—is not very instructive to the countryman. A certain famous New York editor, in stating what he knew about farming, said, "thistles might be exterminated by pasturing the land with sheep." If any man in New Hampshire ever destroyed a thistle in that way, let him hold up his hand, if he can, without a sliver in it. A barrel of phosphate around the roots will kill the old scratcher as quick as sheep would.

Men of all professions, through their generosity or frothiness,—some who know how to raise a mushroom and some who do not,—presume to speak or write for the immediate instruction of the farmer, which he, good soul, should duly appreciate, but he often thinks, in an audible way, the impertinent saying, humorously though, "better learn your own business first, or hoe the row yourself." The farmer has some dirty work to do to be sure, but the amount of soft-soaping which he receives as to the beauty and pleasure, safety and profits of farming, is prodigious, towering up like the foam of a cataract.

An adventurer purchases a small tract of land in a good situation, convenient to market, buys manure, hires all the labor done, raises a great crop and sells it. This is square business; the account is easily kept; the clear profit is footed up twenty-five dollars to the acre, and the conclusion jumped at that the owner of hundreds of acres ought to make money to his own liking. This is a very one-sided view of carrying on an entire farm, generally, but the statement gets into the papers. Another is induced to leave a good occupation, goes into the country, purchases land with high hopes of cream and strawberries, milk and honey ahead, plenty of leisure and shiners in the squirrel skin; but, after experimenting awhile, somebody is disappointed, sells out at a loss, learns that grapes do not grow upon thistles, pulls up stakes for some other business, a wiser individual, if not richer. Now where is the fault? Mostly here: the talk and experience of the man who inherited a rich interval farm with a pile of greenbacks besides, are not very instructive to the boy who commenced with little but his hands and a good will, to live on the rough and almost worn out hill-side. Garden farming, mixed farming, stock raising on an

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extensive range, summer fallowing and stalling stock, are too much confounded by the uninitiated, each requiring a different system of management. Let the man from the valley of the Merrimack, who, in public conventions, for the benefit of the backbone and muscle of the state, talks about big squashes, smooth fields, four tons of hay or seventy-five bushels of corn to the acre, labor all hired, manure bought, and money made out of it, take a rough and stony farm, as a majority are in almost every town, and make it rich, smooth and productive, from the income of such a farm, and the example would be more beneficial to the surrounding community than all the public harangues and agricultural meetings ever heard from.

5. The apple-tree borer, curculio, cut-worm and weevil are the most injurious to crops and vegetation. No new method taken for their extermination. The best remedy is the Frenchman's Flea Poudre: "First catch the insect, then tickle him with a picked stick under the fifth rib, and when he opens his mouth put in *de poudre, monsieur*, he choke sure."

6. Among the commercial manures, Bradley's phosphate of lime applied to the hill is considered to be of some advantage, but often, we judge, the increase of the crop, if sold, would not much more than balance the cost of the manure. The patent chemicalized-terra-culture-take-it-all-in farmer has not been much in practice here; lime and ashes, the latter especially, are needed in abundance upon all of our old farms.

7. Mowing-machines, horse-rakes and tedders are used by a few, not so much as labor-saving machines, as labor changing, from man to the horse, thereby making it easier for the back and bones of the biped.

8. Has the term "brood-stock" or "blood-stock" any definite meaning? All kinds of stock this way are supposed to breed a little and to have more or less blood. H. F. Pearson, F. B. Sawyer and others, have pure blood Merino sheep; neat stock, mostly grades of Devon and native. Horses and cattle sell fifty or seventy-five per cent. higher than twenty years ago.

9. Not much variation in the products per acre in ten years; less if anything.

10. Many farmers attend the fairs, but few exhibitions are made, for the reason that the premiums offered, if taken, would not pay the expense unless one has something to sell or advertise by the show. Animals must be fattened or receive extra care in feeding

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and training for months, in order to be noticed; and the products of the field give no adequate idea of the character of whole crops in general, under any kind of management. Grapes grown under glass should not compete with those raised in the open air, or the products of the city garden with those of the common field. But they often do. Six apples selected from sixty barrels may take the sweepstakes premium, and yet the sixty barrels be only poor No. 1 apples. So with other products. Should not the competition be between whole crops rather than select parts, or are our fair exhibitions to be beneficial only as showing what can be done under extraordinary circumstances?

11. Agricultural papers are taken and read, generally, but not much real study, perhaps, to bring out something new. Farmers know their land can be improved in many ways, but the square question comes up at once, "will it pay?" and the solid fact stands out at times, like a granite boulder, that certain expenditures, if made, would only make a hole in the pocket. In passing through the country, one is often reminded by the rickety fences, dilapidated and deserted buildings, bushes and brambles growing where there was once a garden, that a great change is taking place in all our back towns, business concentrating in other places. But we are told to improve our farms, build new fences, cut down the bushes, blast the stones, fill up the hollows, make more manure and enrich the soil. This is very easily pictured out on paper, but when the plan is put into operation, like some inventor's perpetual motion, it does not always work well. The motive power, money, brain and muscle, give out, or, if some acres are renewed, five times as many more are still running out. To discover a remedy for this we must go back to the causes of the failure. These are some of them: the old buildings were so planned and located that there has been unavoidably much waste; wood and timber sold, and loss of ashes and moisture thereby; sale of produce consumed in distant markets without an adequate return to the land. Here are serious facts, and the question is broad and open, how can the whole farm in the rural districts be improved? The man who can demonstrate a practical, paying method should have his likeness suspended in every household forever.

12. Not many farm accounts are kept. In a system of mixed farming, where the farmer aud his boys do a little of everything every day, using up all the odds and ends of time in keeping

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everything in order, it is difficult to ascertain precisely how much should be charged to the different crops. Who that has set out and trained up a tree can tell what a barrel of apples has cost, or a cow, or a pound of butter, or what a ton of hay is worth after it is consumed and turned into money through the produce of the farm and the land left in its former condition. Would a scientific student supporting a family and doing the labor himself dare undertake it? Query, not old fogyish. If we knew all the expense of living, and what our different crops cost, loss or profit exactly, however gratifying it might be, would we or could we turn a copper or the turf to any better advantage? Those whose business is square work consuming or hiring, buying and selling, state that strict accounts should be kept in all departments of farming. All right, but he who can prove an easy and correct way of doing this would be a public benefactor, and ought to have his rule inserted, in big letters, in the next edition of the arithmetic.

HILLSBOROUGH COUNTY.

ANTRIM.

1. Artemas Brown, James Boyd, William W. Story, fat cattle, butter and cheese; J. K. and D. H. Goodell, Durham cattle, fowls, potatoes, oats; R. P. Whittemore, William M. Conn, cattle and sheep; Morris Christie, horses; George A. Cochran, Durham and native cattle, hogs, corn, potatoes, oats.

2. Corn crop, very uneven; some farmers had better crops than they had had for several years; and others had the poorest crop; should judge that the crop fell short one-third of an average crop; potatoes, about one-half the usual crop; oats, average; hay, less than one-sixth; apples, uncommon large yield.

3. To farmers, fat cattle, pork, butter and cheese, hay, lumber, wood and bark. Several manufacturing establishments are here.

4. No farmers' club; prospect that one will be organized.

5. Wire and grub-worm.

6. Superphosphates for corn and potatoes, applied in the hill, rapid and larger growth; Clark's compost, broadcast on grass,—increase about one-third.

7. Farming implements in general; result, make farming easier.

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8. Some Durham blood kept by George A. Cochran, J. K. and D. H. Goodell. Prices have advanced one-fifth to one-half.

9. No material change.

10. Do not generally attend fairs; reason, premiums too low, and a want of fairness in awards.

11. Some agricultural papers taken.

12. A few farmers keep accounts of farm affairs and try experiments.

BEDFORD.

1. General gardening, milk and market truck. Among the farmers are I. N. Riddle, F. R. French, Frederick F. French, Solomon Manning, George Foster, R. M. Rollins, T. G. Holbrook, Robert Fulton and George Whitford.

2. Rather below the average.

3. Milk, market vegetables, brick-making and fruit-growing.

4. A good farmers' club; Secretary, Solomon Manning.

5. Curculio and fruit pests, also, white grass-worm.

6. Phosphates, ashes, Ville's complete manure, stable manures from Manchester; result is great increase of crops.

7. Mowers, rakes, horse hay-forks, potato-diggers and improved implements generally.

8. Devons and Jerseys; one stock horse, Whitford's Abdallah.

9. Somewhat increased.

10. Attend fairs and exhibit and receive premiums; think they pay.

11. Take many papers, read many books, and see a benefit in it.

12. They generally do.

There are but few towns in the state which show more thrift than Bedford. The farms are in good condition, and are excellent. The young men and young women stay at home, are well educated and enterprsing. Bedford has the credit of being one of the most moral towns in the state.

DEERING (EAST).

1. All farm products, stock and wool by John Bartlett, H. P. Cressey, C. F. Gove, Lewis Goodale, B. Simonds, George Bartlett, F. Bailey, William Wilson, Ira Appleton, E. Fuller and Christy Gregg.

2. Crops lighter than usual, except fruits, which were fifty per cent. above the average; garden vegetables, a failure.

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3. Sale of stock, hay, wood and lumber.

4. No farmers' club.

5. Caterpillars and borers, cut and wire-worms, are very troublesome.

6. Superphosphate applied in the hill.

7. Nearly all farming implements.

8. Durhams, Ayrshires and Dutch.

9. About the same as usual.

10. A general interest is felt and a full attendance at fairs; generally exhibit stock. Deering is not behind in good cattle.

11. Take the agricultural papers, and read quite a lot of books; but too many walk in their grandfathers' paths.

12. But few keep farm accounts.

GOFFSTOWN.

1. Joseph J. Poor, S. P. Johnson, milk; Ed. Shirley, Daniel Shirley, Leonard Robertson, milk and fruit; John G. Dodge, Lewis Sargent, stock; A. J. Hazen, fruit; Horace Hazen, corn, potatoes, fruit and grass; D. M. Taggart, horse stock.

2. Very light compared with other years, on account of the drought. Not over one-half crop, and in many places nothing.

3. Stock, milk, hay, potatoes, fruit, manufacturing of sash and blinds, girls' and boys' sleds, scythe rifles.

4. Do not think a club could be formed.

5. Pumpkin-bug, a small yellow bug with black stripe, and potato-bug.

6. Phosphates, plaster.

7. Mowing-machines, rakes.

8. Advance in prices from one to two hundred per cent. Horses, the Abdallahs.

9. Less by one-fourth on an average.

10. Some, not all, one-half perhaps.

11. I think an eighth part do, not more.

12. Perhaps one or two do, not more.

HOLLIS.

1. N. M. Ames, James E. Hills, Edward Hardy, Isaac Vandyke, Charles Marshall, Warner Read, and Timothy E. Flagg, sell milk to the Boston market; John L. Poole, Joseph E. Smith, Noah Far-

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ley, Dexter Greenwood, Jackson E. Wheeler and Daniel Smith, raise stock and make butter and cheese, and most all of the above raise more or less fruit.

2. Hay crop, medium; corn, about one-half; potatoes, one-half; fruit, more than usual by one-half; oats, rye, barley and wheat, not more than two-thirds our usual crop.

3. Our farmers are about equally divided, so far as the dairy products go, in selling milk and raising stock; most of them have more or less fruit to sell, also wood and lumber.

4. We have a farmers' club in town. Officers,—John L. Poole, President; N. M. Ames, Vice-President; William Worcester, Secretary; Levi Abbott, Treasurer; Executive Committee, one in each school district.

5. The borer, caterpillar and a web-worm, also the curculio, all give trouble in their season. The wire and knife are the most effectual weapons for the borer; the hand, where they can be reached, for the web-worms; a setting mall and sheet large enough to catch the curculio when we give the tree a sudden jar. This last should be attended to daily in the morning, in the early stage of plums, peaches, apricots, and all stone fruit.

6. E. Frank Coe's superphosphate, also Bradley's, Baugh's, Fales's, Croasdale's, Browning's; Dodge Hayward's compound; Josiah Clark's compost; lime and salt mixture, and ashes and plaster, and some others have been used, also guano. No two farmers have had equal results from any of the above commercial manures. In my experience, and I have used all of the above, I find that Dodge Hayward's compound for every thing stands at the head, Clark's compost next, and E. F. Coe's superphosphate third; all the others after the first year give very little to the crop. I apply it usually in the fall, five hundred to eight hundred pounds to the acre, sown broadcast.

7. Mowing-machines, hay-tedders, horse-rakes, horse pitch-forks, of which Raymond's elevator is the best. Plows of various patterns have been very much improved, also cultivators, and, in fact, all our farm tools, from the hand-rake to the mowing-machine, etc.

8. We have the Ayrshire, Devon and Alderney. The Ayrshire is first where quantity is desired, the other two for butter and beef. Very few horses raised; we have no good stock horse in town. Horses and all other stock have more than doubled in price in the last twenty years.

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9. Corn and potatoes are about the same per acre; grass, wheat, barley and oats, have increased one-quarter.

10. They do. In many cases it is thought the horse has much more than his share of attention.

11. We are a reading community and take a good proportion of agricultural publications.

12. We have a few farmers who keep farm accounts and make experiments every year, and profit by the results, but the majority know but very little what it costs to raise a ton of hay, bushel of corn, or in fact anything from a chicken to a good cow or horse.

LYNDEBOROUGH.

1. Charles H. Holt pays special attention to fruit culture, particularly grapes for the market; he manufactures wine to a considerable extent. Otis and Harvey Perham also manufacture wine. Artemas Woodward, Hiram Tarbell and others have recently set out a few hundred vines. Among our best farmers are David Putnam, John Hartshorn, William N. Ryerson, J. Richardson, J. H. Tarbell, George Rose, and George and Edmund Parker, who make the selling of milk a special business, with the exception of J. Richardson, who always has the best oxen and the fattest hogs. E. P. and G. E. Spalding do considerable in the cattle trade.

2. Corn is raised by our best farmers, from forty to one hundred bushels per acre, but the town as a whole raises less corn than formerly. Wheat does well in particular locations, producing from twenty to thirty bushels per acre, but there is less sown than twenty years ago. Potatoes do well for a few years after bringing the seed from the north, but few are raised for the market.

3. The sale of milk, fruit, wood and lumber.

4. We have no farmers' club, but think there will be one formed next winter, as there seems to be a growing interest in agriculture.

5. The apple-tree borer is a great pest in the fruit orchard. The best means to destroy them is the knife of the owner of the trees. Bugs of various kinds infest vines, and, some seasons, are very destructive.

6. Superphosphate, formerly guano, lime and plaster to some extent are used, generally in the hill, for corn and potatoes, with decided advantage.

7. Mowing-machines, horse-rakes, and iron cultivators.

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8. No particular attention is paid to the raising of blood stock. There is a sprinkling of the Dutch, Devon, Durham, and Jersey. Think the Devon the best adapted to our short pastures and not over abundant feed in the winter. The prices of horses and cattle have doubled within the last twenty years. The owners of stock horses are, John Balch in the north part of the town, a five-year old, called Green Mountain Tiger, and Luther Cram in the south part of the town, a four-year old the present season, a beautiful animal of Morgan blood, bottom, style and beauty, all of which qualities are finely brought out in his stock thus far.

9. Think the product of corn per acre greater by about one-third; potatoes, about one-third less. Think in a majority of school districts the hay crop is one-third less, while in one district it has increased more than one-third, owing to the profits in raising milk.

10. A few of our best farmers do, and make exhibitions of fruit and vegetables, which has a tendency to promote improvement and create an interest in agriculture.

11. They do.

12. They do not generally.

MANCHESTER.

1. Market gardening: among the leading men in the business are John Calef, J. E. Clough, Solomon Tobie, A. W. Dickey. General farming: among the leading farmers are Daniel Farmer, John K. McQueston, B. F. Mitchell, John P. Moore, William P. Merrill, J. and E. S. Harvey, George Porter, John Hosley, Isaac Huse, James P. Eaton, Robert Stevens, Joseph Cross.

2. The hay crop was valuable and well secured, although not so abundant as some seasons; early garden crops, good; late, valueless; cereals, ordinary; potatoes, a failure; fruit, superabundant.

3. Sources of income to farmers are market gardening, stock breeding, and lumber; to others, manufacturing, mechanical operations, mercantile business, real estate transfer and speculation.

4. No formal club as a mere farmers' club. There is a horticultural association and a poultry society; the former not active, of the latter A. W. Quint is President, W. C. Garmon, Secretary.

5. The insects are the grub-worm, cabbage-fly and cabbage-worm, squash-bugs, and those that are generally known as pests. The remedies are gas lime, and gas liquids, and other remedies.

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common in this section. Insects injurious to fruit are the borer and curculio, which are destroyed by fire and water, and by every possible device.

6. Many fertilizers are used. It is impossible to succeed without them.

7. New and improved implements are employed, in great variety.

8. There are several stock horses in the city; also Jersey, Alderney, and other pure breeds of neat cattle.

9. Products of the soil are much greater than years ago, probably four or five times as much on an average.

10. All attend fairs and generally exhibit stock, farm products, mechanical work and manufactures.

11. They take many papers, read, and improve their farms.

12. But few keep strict farm accounts, as they should to show the loss or the profit of farming.

MILFORD.

1. Early vegetables, stock, lumber and milk as a specialty by Luther W. Burns, Lovejoy Brothers, A. F. Crosby, Moses Proctor, C. A. Richardson, G. F. Bartlett, B. F. Hutchinson, C. C. Shaw.

2. Crops, about one-third below the average, except fruit, which was one-half above the average.

3. To farmers, hay, early vegetables and milk. To others, manufacturing of various kinds.

4. A good farmers' club—J. B. Moulton, President; C. S. Averill, Secretary.

5. Grub-worm, the pest of corn; remedy, hard digging the only sure method.

6. Superphosphates, salt, plaster, lime, leached and unleached ashes, copperas, etc., applied in the hill. Will not pay except for grass.

7. Nearly all the improved farm implements; result, a deeper pulverization of the soil.

8. C. C. Shaw has Jerseys; E. Burns, M. Proctor, B. F. Hutchinson and Edwin Searle, Ayrshire and Short Horns. Prices advanced fifty per cent.

9. Crops are about one-third greater than ten years ago.

10. Farmers attend the fairs.

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11. Farmers take and read several agricultural papers and books in great abundance.

12. No farm accounts as a rule, but they make experiments and profit by them.

NEW IPSWICH.

1. M. S. Wilson, hay, milk, wheat and corn; Wm. Prichard, hay and milk; George W. Wheeler, bees, milk, vinegar, grapes and potatoes; Addison Wheeler, hay and milk; Wilson Mansfield, hay, milk and English grain; Barton Tenney, hay and milk; Daniel Farwell, hay, stock, butter and English grain; J. O. Wheeler, hay, butter, English grain, corn and potatoes; W. D. Locke, hay, English grain and corn.

2. Hay, three-fourths to seven-eighths average crop; corn, less than an average, cause, drought; English grain, not above one-half average crop; potatoes, less than half a crop, late-planted best; apples, sixty to seventy per cent. above the average; berries, above the average; squashes and pumpkins, nearly a failure; beets, carrots, mangel-wurtzels, turnips and cabbages, the same; beans, one-half to three-fourths crop; honey, not an average; grapes, a very full crop.

3. Milk and products of the dairy; sale of stock, wood and lumber, to farmers; lumber, to a limited extent, by saw-mills, and cotton goods by the factories.

4. None. The subject has been talked up often, but our farmers are scattered over much territory, and but few of them could be relied upon to keep up a club. We have but few young men farmers. Would be glad to see a fresh interest in the cause, and be thankful for help or advice from any source.

5. The borer is king of insect enemies, upon fruit trees. Usual remedy, a "sharp stick." Caterpillars and canker-worms are not very plenty, yet some locations suffer. But little done to exterminate them. Grasshoppers are pests on our highland pastures almost annually. The cut-worm operates freely on corn and cabbages. No general remedy.

6. Bradley's superphosphate almost exclusively, and with very favorable results. Applied usually in the hill for hoed crops, and sown broadcast for grain and grass crops.

7. Mowers, wheel-rakes, horse-pitchforks, seed-sowers, improved swivle and other plows, improved cultivators, Bucklin's harrow, ox-cultivators, hay-tedders, and, the last season, a few of Chand-

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ler's horse-hoes. By means of these improved implements, wonderful changes are wrought, and farmers are becoming less dependent on "hired help," while much of the work is better done than by ignorant day laborers.

8. Very seldom; mostly grades and native. M. S. Wilson, George W. Wheeler, and a few others, have Durham grades and probably some full bloods. A few have Jerseys and Devons, mostly grades. Prices of good stock and horses have advanced 100 to 150 per cent. the last twenty years.

9. Less by ten to twenty per cent. Hay and milk are more prominent. Less attention is given to hoed crops.

10. Not much and make but little effort to exhibit stock. Excuse, too far off to drive stock, and railroad facilities are poor; stock inferior. Better reason, want of agricultural enthusiasm, interest and real enterprise!

11. I judge a large portion of our farmers take from one to three or more agricultural papers and periodicals; books on the subject are not so common. A few farmers really study to improve their methods of cultivation, but a larger number are contented to do *on* as they learned while young to do, with very little perceptible progress, only to "run out" their farms.

12. Only to a limited extent. Those leaving other occupations, especially merchants, mechanics, and others, in middle or later life, more generally adopt a systematic course, resulting in part, at least, from early discipline and business habits necessary in their previous employments. But the early education of a majority of those called farmers has been deficient. They never studied book-keeping, and thus are slow to learn the advantages resulting from such a system.

PETERBOROUGH.

1. General farming, pork and dairy, by John O. Nay, Dolphon Osborn, Jasper Elliott, J. Q. Adams, S. W. and J. H. Vose, W. L. Baldwin and others.

2. Crops, lighter than usual by one-third.

3. To farmers, the dairy and beef cattle.

4. No farmers' club.

5. Some that are common to other towns; no means used to destroy them.

6. Superphosphates, bone meal and guano, applied in the hill. Results, satisfactory.

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7. All improved farm implements.

8. Durhams and Ayrshires are bred to some extent, by Albert Sawyer.

9. About the same.

10. Attend the fairs, but do not exhibit for want of railroad facilities.

11. Take the agricultural papers and read considerably.

12. Keep no farm accounts, but make experiments and profit by them.

SHARON.

Sharon is a small town, occupied mostly by farmers. There is not great enterprise, though the town has good men and grows good crops.

1. No answer.

2. Crops, about the average; somewhat under.

3. Stock raising and beef.

4. No farmers' club.

5. No answer.

6. Superphosphates are used to considerable extent and with good results to come.

7. Mowers and horse-rakes have been introduced where they can be used to advantage.

8. No answer.

9. Corn yields more per acre and potatoes less.

10. Do not attend fairs much.

11. Quite a number of agricultural papers taken in town.

12. Farmers generally do not keep farm accounts.

TEMPLE.

1. Lumber, stock, vegetables and milk, by Isaiah Wheeler, E. G. Cutter, S. W. Edwards, Daniel Felt, M. H. Fisk, J. Bragg.

2. Hay and corn, fair crop; apples, abundant; wheat, barley and oats, light.

3. The products of the dairy, and items named in No. 1.

4. No farmers' club.

5. No answer.

6. Superphosphates, applied in hill with good results.

7. Mowers and horse-rakes.

8. A few Ayrshire and Jerseys.

9. About the same.

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10. Do not attend fairs; think it does not pay.
11. Some take agricultural papers but not generally.
12. But very few keep farm accounts or make experiments.

WILTON.

1. No answer.
2. Crops, lighter than usual except corn.
3. Grain, hay, potatoes and milk.
4. No club.
5. No answer.
6. Superphosphate is used extensively for corn and potatoes with good results.
7. All improved farm implements. Result, saving of labor, and keeping the young men at home on the farm and making labor more agreeable.
8. No answer.
9. Crops are larger than formerly and farmers raise more in quantity.
10. No answer.
11. Take agricultural papers as a general thing.
12. Make experiments but do not keep farm accounts generally.

CHESHIRE COUNTY.

CHESTERFIELD.

1. John Harris, Charles N. Clark, and Eleazer Randall, for mixed or general farming; Jay Jackson and Marshall B. Shaw, stock farmers.
2. Grass is the great crop of this town, and the crop of 1870 was more than an average. The corn crop never was better probably; potatoes and oat crop, a little below an average; wheat is not much raised here; great apple crop.
4. The production of beef (grass fed) probably ranks first with the farmers. Lumber, pail staves, sash, blinds and doors are manufactured to some extent, also bitts and augers.
4. No farmers' club here, and the supply of the right kind of material to make one is a little short.

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5. Caterpillars, curculios, bugs, worms and grasshoppers, common through all this section of country. Caterpillars are burnt off, swabbed off by some. The others meet with little opposition.

6. Coe's and Bradley's superphosphate, used principally in the hill at planting, and generally with satisafctory results when we get a genuine article.

7. Nearly all the farm implements have been greatly improved within twenty years. No mowers and but few horse-rakes were here twenty years ago, now they are thick, making many too lazy to work unless they can ride.

8. Grade Durhams are common here among the best farmers. A small number of thoroughbred Short Horns are owned by Charles N. Clark, Jay Jackson and M. B. Shaw. Charles N. Clark and Noyes Robertson have each a stallion.

9. The yield of corn and potatoes per acre, I think, is a little better than ten years ago; oats, no better; grass, about the same, except pasturage, which is degenerating.

10. Most of them attend the fairs and but few exhibit stock. The distance from the fair grounds and the small premiums paid for fat cattle are amongst the reasons why Chesterfield does not exhibit more liberally. Horse trotting gets too great a share of the premiums and attention of the spectators, while fat cattle that cannot be moved to, from, or kept during the fair without great loss, receive but a meagre crumb.

11. A limited number of papers are taken, agricultural books are read but very little, if any, and but little study devoted to the farmer's vocation.

12. No is the rule, the exceptions are rare.

GILSUM.

1. D. W. Smith, horses; E. W. Gunn, fruit; W. A. Wilder, maple sugar.

2. Crops, about an average.

3. Wood, bark, lumber, maple sugar and wool with some wooden manufactures.

4. No farmers' club.

5. Striped potato-bug, no remedy known; currant-worm, remedy, ashes sifted upon the bushes when wet.

6. Superphosphates, applied in the hill. Result, generally advantageous.

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7. Horse-mowers and rakes have been introduced.
8. None at all.
9. Corn greater and potatoes less.
10. Farmers attend fairs but little. Reason, the rich and influential draw all the valuable prizes.
11. A few take agricultural papers.
12. But few keep farm accounts.

HARRISVILLE.

1. Darius Farwell, Aaron Smith, Alvah Kendall, mixed farming and stock raising; Milan Harris, stock and vegetables.
2. Crops, lighter than usual; an average of two-thirds of the usual crop.
3. Hay, wool, stock raising, lumber, woolen and wooden manufactures.
4. No farmers' club.
5. Borers, cut and grub-worm, also canker-worm. Remedy, cut off the twigs, when first formed.
6. Superphosphate applied in the hill.
7. The various agricultural implements are used with success.
8. Stock mostly improved of various kinds.
9. Not much change.
10. Usually attend fairs and exhibit.
11. To some extent but negligent in this respect.
12. Do not keep farm accounts generally but try some experiments.

KEENE.

1. Elijah Blake, Geo. K. Wright, John Colony, David Woodward, Charles N. Wilson, Eugene S. Ellis, stock raising and mixed husbandry.
2. Crops, about the average, except apples, which were abundant; potatoes and oats, very light.
3. Farm products and wool; various manufactures.
4. A farmers' and mechanics' club; Secretary, Geo. H. Gilbert.
5. Potato slug and currant-worm. Remedy, former, by lime; latter, jarring into hot sand.
6. Superphosphates applied in the hill for corn. Result, generally good.
7. All the farm implements, saving much time and labor.

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8. Little full-blooded stock; some grade Durhams and Jerseys. The county society own two blood bulls.
9. No material change.
10. Several attend fairs, such as have good stock.
11. Leading farmers take agricultural papers.
12. Few keep farm accounts.

MARLOW.

1. No returns.
2. Less than usual.
3. Stock raising, maple sugar and general crops; tanning and lumbering.
4. No club.
5. No injurious insects reported.
6. Superphosphates in hill and broadcast deemed essential.
7. Many improved farm implements, lessening labor.
8. F. J. Rogers has improved stock.
9. Generally less; corn, greater.
10. Many do.
11. Many do.
12. Not many.

NELSON.

1. Stock, lumber and grass, by N. W. Hardy, J. H. Melville, Russell H. Kittredge, E. C. Tolman, F. A. Jewett and Henry B. Taylor.
2. Crops, below average; fruit, good; potatoes, poor.
3. Growing vegetables, sugar making, lumbering.
4. No club.
5. Potato insects; curculio.
6. Superphosphates; nothing else. Result, good.
7. Mowers and wheel horse-rakes.
8. Alderney, mixed and scrubs too much used.
9. Products increased.
10. Go to fairs but do not exhibit stock.
11. Take agricultural papers and have some improved methods of cultivation.
12. Some keep farm accounts.

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WESTMORELAND.

1. John B. Knight, corn and oats; Foster Franklin, dairying; Erastus Ware, tobacco; R. E. Green, Albert Chickering, Reuben Kendall, J. E. Buffum, Warren Shelby, stock breeding; John Woods, Otis Hutchins, Dana Livingston, Willard Bell, Jr., mixed husbandry; Henry Esty and Samuel D. Clark, fruit.

2. Crops, above the average.

3. Stock, wool and grain raising.

4. No farmers' club.

5. Cut and wire-worms. Remedy, late autumn plowing.

6. Superphosphate applied in the hill for corn and potatoes have given universal satisfaction; ashes are also used.

7. Nearly all the improved farm machinery is used with much saving of labor.

8. Thoroughbred Durhams and Devons.

9. About the same as in previous years.

10. A few go to fairs, but all generally believe them to be composed too much of horse-racing, swindling and not enough of interest to the farmers.

11. Take the agricultural papers and read books.

12. Many keep farm accounts and try experiments.

WINCHESTER.

1. F. S Forbes, J. G. Morse, W. H. Hubbard, tobacco; L. and W. Roxford, E. and A. Kingman, fat cattle; Liba Ware, Amos Tufts, H. B. Swan, J. B. and A. Atherton, general farming.

2. Hay, corn, oats and tobacco, average; potatoes, light; fruit, abundant.

3. Stock raising, fatting cattle, lumber, tobacco.

4. No farmers' club.

5. Cabbage and currant-worms.

6. Superphosphate of lime and guano applied in the hill give general satisfaction.

7. Nearly all tools in use at the present time.

8. Short Horns and Alderneys; three stock horses. Prices have more than doubled.

9. Potatoes, about the same; other crops have increased.

10. Attend the county fairs, but not the state.

11. Take the agricultural papers and read agricultural books.

12. Farm accounts not kept very generally.

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SULLIVAN COUNTY.

ACWORTH.

1. A. S. Finlay, Samuel Slader, J. G. McKeen, H. G. Perham, A. M. Bragg, stock raisers; Joseph Hayward, sugar and potatoes; J. H. Clarke, bees.

2. Crops about the average.

3. Stock raising, maple sugar, woolens, boots and wooden ware.

4. A farmers' and mechanics' club. President, S. H. Bascomb; Secretary, J. G. McKeen.

5. Curculio and the borer. Remedy, birds for the first, knife and wire for the other.

6. Superphosphates, applied in the hill with good results, forcing crops forward.

7. All improved implements. Much saving of labor.

8. Short Horn cattle and merino sheep.

9. About the same.

10. Town fair held past two years. People all attend and make good exhibitions.

11. Farmers usually take agricultural papers.

12. Do not keep accounts or try many experiments.

CLAREMONT.

1. John, Frederick and Wm. Jones, F. P. Smith, J. P. Upham, S. G. Jarvis, Russell Jarvis, C. H. Long, Laban Ainsworth, C. H. Ainsworth, Henry Colby, Ira Colby, William F. Jones, Enoch Johnson, J. W. Sanborn, John Blodgett, William Ellis, general farming.

2. Crops, lighter than usual. Apples, three times that of any year for ten years.

3. Wool, dairy products, beef and wood.

4. Claremont Agricultural and Mechanical Association. President, Fred. P. Smith; Secretary, Arthur Chase.

5. Canker and currant-worm. No remedy has proved effectual.

6. Superphosphates and plaster applied in the hill, and broadcast for grass land.

7. Mowers and farming implements of all kinds have been introduced with great advantage.

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8. Few thoroughbred cattle or horses. No stock horse of extraordinary quality. Prices increased 33 per cent.

9. Products of hoed crops have increased.

10. Farmers attend the town fairs but few the state. Reason, no confidence in management.

11. Most take and read agricultural books.

12. But very few keep accounts or try experiments.

CORNISH (FLAT).

1. Joseph B. Comings, Charles W. Comings, L. Harmon Dow, Lemuel Martindale, Chauncey P. Jenney, Carlos F. Huggins, James M. Davidson, Seth Cole, William Bullock, Henry A. Weld, Capt. Chester Pike, William Westgate, Elijah P. Renyon, Benjamin R. Chase, Albert E. Wellman, John L. Paget, Amos Richardson, Jonas Hastings, William D. Lear, Charles E. Jackman, Stephen B. Deming, George D. Renyon, Larnard Powers, Norman A. Deming, Erastus Fletcher. No specialty; mixed farming.

2. Corn, medium; potatoes, generally good; wheat and oats, medium; hay on all soils, fifteen per cent. below the average; roots, forty per cent. below the average; fruit of all kinds, unprecedentedly large.

3. The farming of this town is mixed, almost every farmer keeping all kinds of stock, although not so many sheep kept as formerly. The produce of the farms is generally consumed on the place, and many buy more or less grain. The farms in town, not including the small places owned by mechanics or situated in the vicinity of the village, average from one hundred to one hundred and twenty-five acres, of which from ten to thirty is woodland. These farms carry about the equivalent of seventy sheep, ten head neat stock, and three horses and colts.

4. We have a farmers' club organized January 10, 1870. We held meetings last winter once in two months and propose to do the same this winter. A good deal of interest is manifested in these meetings although the attendance as yet has not been so large as could be wished, but we hope to increase it the coming winter. Our annual meeting for the choice of officers was held November 26; they were as follows: President, Capt. Seth Cole; Vice-Presidents, Charles E. Jackson, Carlos F. Huggins; Secretary, Henry M. Day; Treasurer, James M. Davidson; Executive Committee, Lemuel Martindale, Chauncey P. Jenney, L. Harmon Dow.

5. No answer returned.

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6. Phosphate of lime (generally Bradley's), applied to corn in the hill with good results, and also to the root crop with good effect. Clark's method of composting manure is used by several of our farmers and I believe the report of it to be good.

7. The mowing-machine, horse-rake, horse-pitchfork, Chandler's and Wattress's horse-hoes, Gray's horse-power sawing and threshing-machines, sawing-machines, six-tined manure and three-tined pitchforks. Great advantages have resulted from the use of these machines and implements, both in substituting the labor of horses for the labor of men and also in the dispatch with which work can be done. I believe one man in one year accomplishes fifty per cent. more business then he did twenty years ago. The above remarks do not apply to the horse pitchforks; it being generally conceded it is not a practical machine for our ordinary farms although they may do good business on large farms cutting two hundred or five hundred tons of hay, where they can afford to keep a horse hitched to it all the time unloading hay wagons.

8. Charles E. Jackson keeps the full-blooded Alderneys. This is all the full-blooded stock among cattle I know of in town. There is a good deal of grade Short Horn stock but the majority of the stock is composed of Mr. George's "grand old native cows" and her descendants. The largest share of the sheep are grade merinos, although the coarse-wooled mutton breeds are coming into favor with a good many farmers. Sheep, no higher; horses and neat stock, seventy-five per cent.

8. About the same.

10. They attend the fairs but generally leave their stock and farm implements at home. I do not know why this is so, unless it is a lack of enterprise

11. To some extent. I think they are doing so more and more every year.

12. Very few, if any, keep accounts with the farm, but I think a good many make experiments and no doubt profit by the result of those experiments.

LANGDON.

1. Robert Elwell, Wm. F. Loomis, thoroughbred cattle.
2. Crops, about the average.
3. Agricultural products and live stock.
4. No farmers' club.
5. Potato-bug the only pest.

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6. Superphosphates and plaster applied in the hill to corn and potatoes with good results.

7. Mowers and horse-rakes; result in a saving of labor and a better quality of hay.

8. Thoroughbred Short Horn; Spanish merinos. Prices have more than doubled in twenty years.

9. Greater per acre.

10. Attend the fairs and exhibit.

11. Take and read agricultural books and papers.

12. Not so much as in some towns.

LEMPSTER.

1. Mixed farming by E. S. Barrett, Samuel Blanchard, Hiram Fletcher, A. & F. C. Carey, Charles M. Booth, L. A. Purmont, A. J. Mitchell, Hiram Parker, Solon Pollard.

2. Crops, below the average.

3. Stock-raising, butter and sugar.

4. A farmers' club; A. J. Mitchell, Secretary.

5. Caterpillars on apple trees.

6. Superphosphate in the hill with good results generally.

7. All the improved implements have been introduced.

8. A large amount of grade Durhams; one stock horse. Prices have doubled in twenty years.

9. Products have advanced ten per cent.

10. Do not attend the fairs much, nor exhibit. Fast horses take all the premiums.

11. Take some papers, but not enough.

12. Not many accounts kept, but some experiments tried with profit.

PLAINFIELD.

1. George C. Freeman, Edward Freeman, Jr., Benjamin C. Daniels, Fred B. Hanchett, William C. True, Henry C. Farnum, Jacob Beal, William B. Ward, Nathaniel M. True, Thomas Penniman, Ralston Penniman. These are some of our largest farmers; all keep a small dairy and keep sheep, some of them large flocks; this is the main business of farmers of Plainfield.

2. Hay was considered about two-thirds crop the last season: corn about an average crop; potatoes fell off from one-third to one-half; wheat about an average crop; oats about an average

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crop; the fruit crop was above an average; apples more than twice what they will average; the drought of the past year was very severe with us and hurt all crops more or less.

3. The raising of stock, wool and butter; there are other sources from which the farmer gets some money — a little pork, some poultry; now and then we sell a good horse.

4. We have a farmers' club in town which was organized the past winter; President, Levi L. Bailey; Secretary, John H. Westgate.

5. We had a new worm that about ruined the cabbage crop last year, a green worm about an inch long when it got its growth; we have the caterpillar, the rose-bug, the yellow-bug, the large black squash-bug, the currant-worm and others, but the above named are the most troublesome.

6. Superphosphate of lime is used with success, also plaster of paris; then we manufacture some composts such as hen-droppings with fine muck or fine manure; and again, we use all the ashes we can get; where a farmer has a muck bed he supplies his barn yard with a portion of it. I do not say all do but a great many do.

7. The mowing-machine has taken the lead of all labor-saving machines that have been introduced in this section of the country; the horse-hoes, and various kinds of plows and harrows, etc.

8. We found last April, when taking the invoice in this town, two very fine Short Horn bulls, one owned by Benjamin C. Catling, and the other by Harrison H. Jordan, and one full-blood Ayrshire bull, owned by H. C. Case. I think that the price of horses and cattle has nearly doubled in the last twenty years; we have no stock horses in town.

9. There is no great difference between ten years ago and now.

10. There is now and then a farmer, if he has plenty of money to spend, who will go to the state fair. I do not know of there being any stock exhibited from this town; the expense will not pay. In regard to county fairs, there was one organized in this county some years ago, but it is among the things past and gone. We have exhibited some stock at the Connecticut River Valley Fair and received some valuable premiums.

11. The farmers in the town take almost all the agricultural papers printed in the New England states, and we have an agricultural library with some of the best works on agriculture. If a

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man makes a good thing in an experiment one year, he is pretty apt to try the same again.

12. I should say, in my opinion, the farmers do not keep their farm accounts as they should, for at the end of the year I do not think there is one in five can tell how much they have made, any other way than they may know how they stood in regard to debts, and at the end of the year, perhaps, can tell how much they owe, or how much more money they have get at interest than they had a year ago.

UNITY.

1. General farming, sheep, horse and cattle raising by E. J. Glidden, U. M. Straw, George Neal, Harvey Sanborn, Norris Lufkin, L. F. Quimby, Israel Breed, Moses Johnson, John Paul, Ora Huntoon.

2. Crops, about an average, a little below.

3. Horses, cattle, sheep, hay, lumber and maple sugar.

4. No farmers' club.

5. Do not suffer much by insects.

6. Lime, salt, plaster, ashes, etc., are used to some extent. Think fertilizers are adulterated and unreliable.

7. Nearly all improved farm implements.

8. Mixed breeds; no full-blood stock in town; prices have doubled in twenty years.

9. Crops have increased.

10. Attend all the fairs and exhibit stock.

11. Take the agricultural papers.

12. Do not, generally, keep farm accounts.

WASHINGTON.

1. Raising cattle, sheep and horses by W. D. Proctor, Samuel Gove, Simon Ayer, Woodbury Dresser, Caleb Carr, Joel Severance, Jabez Fisher and Alonzo Marshall.

2. Corn, oats and barley, about the average; hay, two-thirds; potatoes, less.

3. Raising stock, dairy products, lumber, and maple sugar.

4. A farmers' club: President, H. I. Hoyt; Secretary, J. F. Bailey.

5. Cabbage-worm; remedy, pick them off.

6. Superphosphates, with good results.

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7. Improved implements are used to advantage and save labor.

8. Ayrshires, Devons and Durhams are numerous. One stock horse in town. Prices have doubled in twenty years.

9. No answer.

10. Attend the fairs but do not exhibit stock and products; reason, lack of enterprise.

11. Take a large lot of agricultural papers but do not read many agricultural books.

12. Not many farm accounts kept.

GRAFTON COUNTY.

BATH.

1. C. C. Hutchins, Edward Woods, D. K. Jackman, Joseph M. Jackman, N. M. Tewksbury, Horace Whitcomb, Ezra B. Gale, Ebenezer R. Deming, Phineas Chamberlin, Arthur Hibbatd, D. P. Child, B. G. Child, S. & W. Minot, H. B. Deming, Andrew J. Woods, Arthur Woods, Henry C. Carbee, S. S. Carbee, M. S. Bedell, Moses S. Johnson, Isaac H. Chamberlin, Geo. W. Chamberlin, Abiel Chamberlin, Moses M. Weeks, Bartlett Weeks, Henry S. Lang, Wm. H. Lang, John C. Lang, Moses Abbott, Thomas M. Nelson, A. P. Carpenter. These are mostly large farmers, owning and cultivating farms from one hundred acres and more. Some have farms of two hundred and three hundred acres, and a few of larger extent. They raise all the usual farm products in abundance and excel in hay, grain, young live stock, oxen and shoats.

2. The hay crop in some farms is about one-fourth short in quantity, but excellent in quality, and well secured in barns, without rain to injure it. It is estimated it will winter as much stock as in former years: wheat crop, about one fourth short; oat crop, one fourth short; corn crop, twenty-five per cent. above average years, ripened one month earlier than usual and was not injured by frost.

3. Horses, hogs, cattle, sheep, wool, grain, potatoes, butter, cheese and pork. There are three starch mills in Bath, viz.: Bartlett & Co's., Whitcher & Davis's and Gen. John Bedel's; the last named has made one hundred tons of starch, or more, this fall; I am not informed as to the amount of starch made by the

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other mills. A great many potatoes are raised in this town; sold to starch mills, sent to market, fed to stock and used for domestic purposes. Linus M. Hibbard planted fifteen acres and raised about three thousand bushels; Joshua M. Nutter planted twenty acres and raised thirty-seven hundred bushels, and others, more or less.

4. Yes; President, William Minot; Secretary, H. B. Deming. The fair was held at Bath village, Thursday, October 13th, being the fourth annual fair; fully attended and considered a great success.

5. A green worm has destroyed nearly all the cabbages and turnips; the borer and caterpillar have injured the apple trees. The remedies made use of are various; some have applied the Grafton fertilizers with success and saved their cabbages thereby; others have used salt; a decoction of tobacco leaves has also been applied, and the usual remedies for the borer and caterpillar.

6. St. Johnsbury fertilizer, Bradley's fertilizer, Grafton mineral fertilizer, plaster of paris, bone-dust, usually applied in the hill.

9. Improved mowing-machines, horse-rakes, tedders, horse-hoes for potatoes and corn, improved harrows and plows, and cultivators. Great advantages have resulted from the use of the horse-rake and mowing-machine; the tedder is also coming into use, and the pitchfork used by machinery in unloading hay; a great improvement in hoes and pitchforks and nearly all farming tools, above such as were in use twenty years ago.

8. Durham, Alderney, Ayrshire, Hereford. Owners, D. K. Jackman, H. Hibbard, C. A. Weeks, and others. D. K. Jackman has six blooded horses, and Edward Woods has a span of mares purchased in Canada.

9. Greater, in most crops; one-third in corn; more potatoes are planted but whether the yield is greater or less per acre, I cannot say. The cultivation within ten years is much improved for most crops; more manure is used, and the land is more thoroughly plowed and harrowed. Plowing in the fall, deeper, is more practised and better understood than it was ten years ago.

10. Some of them do attend such fairs and make exhibition of stock and farm products. Others object to the state and county fairs, because they are attended with horse-racing, more or less, which absorbs the attention from topics of more vital interest to the farmer. Bath farmers much prefer their own fair, managed in their own way.

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11. They do, more or less, and I have do doubt derive considerable advantage from them.

12. A. P. Carpenter does; the others do not, to my knowledge.

DORCHESTER.

1. Poatoes, wheat, corn and oats by L. A. Follensbee, E. R. Read, T. R. Norris, N. Kinsley, N. Youngman, A. Leavitt.

2. Crops, about the average, except apples, which are abundant; hay and wheat, less.

3. Wool, potatoes, butter and lumber.

4. No farmers' club.

5. No answer.

6. Superphosphates in the hill for corn and potatoes with good results.

7. Few mowers and rakes, with good results.

8. A few Durhams. Prices advanced twenty-five per cent.

9. Greater by ten per cent.

10. Farmers attend the fairs.

11. Farmers generally take agricultural papers.

12. Do not experiment as much as they ought to.

FRANCONIA.

1. Neat stock horses by John W. Bickford, Horace and James Knight.

2. Crops, about an average except wheat and oats, which were light.

3. Raising potatoes for starch; beef and stock for market; lumbering; hotel and boarding business.

4. No farmers' club.

5. No answer.

6. Plaster and superphosphate.

7. Mowers, doing away with at least one-third of the labor in haying.

8. Prices have doubled in twenty years.

9. About equal.

10. Do not attend fairs.

11. Take about twenty copies of agricultural papers.

12. Very few accounts kept or experiments tried.

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GROTON.

1. General farming, by David Hobart, Asahel Buell, Parker Blood, Willard Heath, A. L. Crosby and David Cheney.
2. Crops, lighter than usual; potatoes, good.
3. Farming and lumbering.
4. No farmers' club.
5. Yellow bug on pumpkins and squashes. Remedy, plaster and superphosphates.
6. Superphosphates in the hill.
7. Mowers, plows and cultivators.
8. Jerseys; one English stock horse.
9. Corn, more; potatoes, less.
10. Some attend fairs, not many. Think them *foul* not *fair*.
11. Quite a number take agricultural papers.
12. Not many keep accounts or try experiments.

LEBANON.

1. John A. Miller and Joel Baker, thoroughbred merinos; Geo. Blodgett and James Wood, thoroughbred merinos and dairy; Enoch Freeman, thoroughbred merinos and fruit; Henry Hough, Thomas Hough, Abel Storrs and N. B. Stearns, sheep, cattle and fruit; O. L. Stearns, grain; John Ela and J. P. Farnum, sheep and dairy; John Hebard, sheep and fruit; C. B. Plastridge, sheep and horses; Samuel Craft and son, Durham cattle; A. F. Hodges, dairy; John T. Breck, Alderney, dairy; H. S. Billings, merinos, Alderney cattle and fruit; Flanders & Kennerson, nurserymen.

2. Hay, three-fourths crop; corn, average; grain, three-fourths; potatoes, one half; apples, 100 per cent. above average; vegetables, not half a crop; cabbages and turnips, entire failure.

3. Wool and the products of dairy, with sale of beef, pork and poultry, by the farmers. The income from manufactures are from blinds, sash, furniture, machine shops, foundries, sponge factory, school furniture, &c.

4. We have a farmers' and mechanics' club, which has been in successful operation for the past two years. James Wood, President; John T. Breck, Secretary.

5. Weevil in wheat, currant-worm. Remedy, shaking the bushes daily. Cabbage-worm, curculio, cut-worm, wire-worm. No general remedy.

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6. Phosphate is largely used in the hill for hoed crops, with good results. Poudrette is used to a limited extent.

7. Mowers, wheel-rakes, tedders, cultivators, improved harrows and plows, in consequence of which farm work is better done, and in better season.

8. Yes. Samuel Craft & Son, West Lebanon, Kentucky Durhams; John T. Breck, Alderneys. Milan Townsend, owner of Mascoma Chief, (six years old, out of old Flying Morgan) raised by H. S. Billings, and drew the first premium at the New England Fair (at Concord) for two year olds; William M. Kendall, owner of Vermont Morgan. Prices of good stock have advanced at least 100 per cent. in twenty years.

9. Less by at least ten per cent.

10. But very few attend and make exhibition at the state or county fair, but for the past two years there has been a town fair, at which there has been a general attendance and fine exhibition in nearly every department. The reason, as stated, for not attending state and county fairs, is the distance and trouble of getting stock, &c., to and from.

11. Yes; to a greater or less extent. Most farmers take one or more agricultural papers. Books treating of agriculture are not common, but there seems to be a better interest on the subject than formerly.

12. No.

LITTLETON.

1. Abijah Allen, Chester M. Goodwin, P. C. Wilkins, John M. Charlton, Taylor Morse, Frank McIntire. We have no men who make any one branch of farming a specialty.

2. Estimated average per acre, 1870.—Hay, 1400 to 2000 lbs.; corn, 40 bushels; wheat, 10 to 16 bushels; oats, 20 to 35 bushels; barley and buckwheat, half crop; beans, a full average; potatoes, 175 to 225 bushels.

3. Hay, potatoes and beef.

4. We have a town club. President, L. F. Noble; Secretary, Noah Farr.

5. The wheat midge; not very troublesome if the wheat is sown early, or in April. The common striped cucumber-bug; apply root ashes, plaster, &c., for a remedy. The cabbage-worm; a small bright green worm about an inch and a half long, utterly destroying the cabbage in August and September. Have no remedy.

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6. The usual phosphates and fertilizers the market affords, sometimes applied with advantage, but it is the prevalent opinion among our farmers that they do not pay the cost and trouble.

7. Mowing-machines, horse-rakes, horse-hoes, Bucklin's harrows, &c.

8. I believe Geo. Eastman owns a thoroughbred Jersey bull. Have some grade Durhams and Herefords. There are four stock horses.

9. The corn crop is certainly improving. Potatoes, I think, will average better than ten years ago, that is, we receive more sound potatoes per acre now than then.

10. Yes. "If not" it is usually because the fairs partake more of a gambling horse-race than anything else.

11. There is a goodly number of agricultural papers taken in this town but many more of the political and religious pattern.

12. No.

LYMAN.

1. Stock raising, potato raising and butter making. The farmers are O. P. Titus, S. L. Locke, J. P. Wheelock, C. C. Foster, S. R. Titus, Herbert Moulton, Ira O. Knapp, E. F. Stickney, James Clough, D. G. Eastman, M. D. Young and others.

2. Crops, about an average, except wheat, more than average; hay and oats, less.

3. Raising potatoes for starch, stock and butter making.

4. A farmers' club. President, I. D. Miner; Secretary, Geo. Parker.

5. No answer.

6. But very little commercial manures used.

7. No answer.

8. No answer.

9. About the same as ten years ago.

10. No; do not like the management.

11. Some agricultural papers taken, but not enough.

12. No farm account or experiments tried that we are aware of.

PIERMONT.

1. Uri Chandler, in the wool and sheep business, has six hundred and seventy-five sheep now; Micajah Emerson, high-blooded sheep and honey; H. H. Palmer, for nearly eight years past in sheep

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and wool business, has kept from four to six hundred. Benjamin Hibbard, sheep and wool, has fatted sheep for several years for market, averaging one hundred and seventy-five a year. He sold, in February, eighteen hundred and seventy-five, and has over two hundred and fifty on hand; D. C. Bickford, potatoes, sheep and grain; G. W. Stevens, Charles Manson, Moses Learned, J. Robinson, C. Robinson, J. E. Blaisdell and G. Blaisdell, are considerable farmers.

2. Potatoes, better than common; corn, better than other grain; hay crop, middling good; oats, light crop; India wheat, fair; wheat, below the average.

3. Lumber, wool and scythe stones. Till within two or three years there have been several large dairies in town, now I know of none, except small ones.

4. No farmers' club. We have less than nine hundred inhabitants, less than two hundred voters, so can get up no interest.

5. Have not been troubled much with anything; something kills onions, and last year there were no cabbages.

6. Plaster and phosphate applied in the hill with corn and potatoes before covering. Highly advantageous in some cases, others making no difference.

7. Mowing-machines, wheel horse-rakes, hay-tedders, steel plows, Blanchard's improved cultivators, horse pitch-forks, etc. The advantages are saving time and strength, making the beast do the work that men once performed.

8. Uri Chandler, Joel Pennock, and John Bagley have Alderney cows; others have part Durhams; J. D. Martin has a three-years steer, half Durham, that weighs over eighteen hundred pounds and is not very fat, is in good working order. Neat stock has doubled in price (or nearly so) within twenty years; horses are one-half higher but not so high as they have been.

9. Think crops of corn and potatoes are greater per acre, enough to be noticeable, can't tell how much.

10. Part of us do, have received diplomas and premiums.

11. We read agricultural papers and books, and study some.

12. Guess not.

PLYMOUTH.

1. General farming by Washington George, Amos Clark, E. S. Weeks, A. E. Cook, Calvin Clark, J. L. Whidden, C. H. Bowles, W. W. Gibson, Peter Hobert, Geo. Leed and J. H. Johnson.

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2. Crops, below the average; apples, abundant.
3. Hay, apples, oats and corn.
4. No farmers' club.
5. Cabbage-worms. No remedy given.
6. Superphosphates.
7. Mowers and rakes.
8. Alderneys and Durhams.
9. One-third greater.
10. Go to the fairs and exhibit.
11. Take the agricultural papers and read.
12. Keep farm accounts and try experiments and profit by them.

RUMNEY.

1. G. C. Gillet, O. D. Doe, corn and grass; D. D. Kenniston, John Marston, corn, grass, wheat; H. W. Herbert, cows, butter, cheese and hogs; G. C. Jones, grass.

2. Corn, oats and rye. Owing to the drought all crops were cut off from one-third to one-half from ordinary years, excepting wheat, which came up nearer the usual amount than any other; potatoes might have come up to the usual yield on back land, but on intervales not so.

3. The greatest source of income to farmers is derived from the sale of stock and hay. Lumbering is extensively carried on in this town, and the greatest amount of income in any one branch of business is derived from the manufacture of all kinds of lumber.

4. We have a farmers' club started in this town. President, C. W. Herbert; Secretary, S. D. Baker.

5. The worms that are the most destructive are the white-grub, so called, and the black-worm and wire-worm; I think the black-worm the worst of all; striped-bugs eat the vines so as to be a great pest; borers trouble our apple trees. No general means used to prevent, each man uses his own remedy. Some soak the seed in vitriol, etc.

6. Phosphate is the most used, now. Artificial manures are like the fashions of hats, run well for a short time. Applied mostly in the hill, but some used broadcast. The majority think it unprofitable, some think otherwise, but it will not pay in this region to use for general purposes of agriculture.

7. Mowing-machines and cultivators are the two principal things, and are used to good advantage.

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8. Blood stock is not general here, but C. W. Herbert and H. W. Herbert have the Kentucky Durhams and some of the stock or breed imported by Cochran of Canada. Horses and cattle are worth double what they were worth twenty years ago. We have no stock horses.

9. Corn, potatoes and all other crops are less than ten years ago, (perhaps wheat is as good); corn will yield about two-thirds or three-fourths, and potatoes, within twenty years, do not yield over one-half what they did; twenty years ago we could get double what we now can.

10. Our farmers do attend the fairs and make slight exhibitions.

11. Our farmers take agricultural papers, but do not generally study to improve their methods of cultivation.

12. Very few only do this.

THORNTON.

1. George Jenkins, W. T. Merrill, V. S. Durgin, B. F. Hanaford, C. P. Moulton, J. B. Sanborn.

2. Crops, one-third less than usual.

3. Lumbering and taking summer boarders.

4. None.

5. None reported.

6. Phosphates.

7. Mowing-machines and horse-rakes.

8. None.

9. About the same.

10. No, because the money is paid for horse-racing and not enough for stock to pay expenses.

11. Some do.

12. Not any.

COOS COUNTY.

CLARKSVILLE.

1. E. K. Young, J. W. Young, N. C. Young, Pelatiah C. Roby, John Keyzer. Stock, potatoes and wheat.

2. Crops, about an average, except buckwheat which was below.

3. Stock, butter, potatoes for starch.

4. No farmers' club.

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5. Weevils in wheat. Remedy best known, sow early.

6. Plaster is used to some extent, with good results; sown broadcast.

7. Mowers and horse-rakes; result, get hay in better season, with less labor.

8. One stock horse. Prices have advanced one-third in twenty years.

9. About the same.

10. One farmer attended county fair, going fifty miles.

11. Few take the agricultural papers; do not read many agricultural books.

12. No farm accounts.

COLUMBIA.

1. Wm. E. Cone, wheat, corn, dairy, mixed farming; Wm. W. Russ, hay, mixed farming; Samuel J. Bailey, stock, mixed farming; Albert A. Titus, potatoes, mixed farming; E. George Rogers, Jonathan Gilman, stock and grain, mixed farming; Samuel M. Harvey, apples, mixed farming.

2. Hay, excellent in quality, yield about average; oats, early sown good, others light; wheat, extra in quality and yield, but little sown; corn, good, better than average, sound; potatoes, one-half better than average, sound.

3. Starch from potatoes, stock, wool, butter, lumber. As mixed farming is followed here, we all have "a little of almost everything and not much of anything" to sell.

4. There is no farmers' club in the town and our population is so scattered that it seems impracticable to organize one.

5. We have been highly favored in the past in respect to the depredations of insects. The potato-bug has appeared, but only in small numbers so as to be readily brushed off from the plants and destroyed. Cabbages were all destroyed last season by the cabbage-worm, and currants have suffered as in other sections.

6. Plaster was tried, but was not satisfactory. Phosphate has been tried and proved more beneficial. Applied to corn and potatoes in the hill seems to give the best return. It advances corn two or three weeks, adds one-third to the fodder and increases the yield of grain. On some lands it is equally beneficial to potatoes. Guano has not been tried.

7. On this our farmers are wide-awake and quite up to any other section of the State. Mowing-machines, horse-rakes and

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horse-forks, the best styles of plows, harrows, cultivators, horse-hoes. The advantages are very marked.

8. Here we are wofully deficient. Everything is grade. Grade bulls of the Short Horn stock, Leicester grade sheep, Chester white hogs. We are a little better in this, having some full-blood. Our horses are French, Morgan and anything you like.

9. Hay has fallen off about one-half; oats, one-quarter; while corn and potatoes are above the standard of that date.

10. Not generally, because the fair is now in the interest of horse jockeys.

11. There is a marked improvement in this respect, but we are still far behind the age. Our farmers are a very hard working class and are slow to see the advantage that thorough study and investigation offer them.

12. No accurate experiments are made, or but few, though our farmers seem to be observing the result of their operations more closely than formerly.

DUMMER.

1. General farming, neat stock, and potatoes for starch by Wm. A. Willis, J. M. Bickford, Joseph Leighton, Wm. Leighton, J. C. Wight, E. P. Twitchell, Clayton Twitchell, Thomas Wentworth.

2. Crops, about the average; wheat, a failure.

3. Lumbering and neat stock.

4. No farmers' club.

5. Brown grub; remedy, wood ashes. Cabbage-worm; remedy, salt, lime and tobacco.

6. Plaster has been used but without success.

7. All improved implements used with success.

8. No full-blooded stock in town. Prices have advanced fifty per cent.

9. About the same, except wheat, which is twenty per cent. better.

10. Not very extensively.

11. They read agricultural papers.

12. Very few keep farm accounts.

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LANCASTER.

1. Barton G. Towne, A. G. Noyes, Emmonds D. Stockwell, James W. Weeks, William Rowell, George H. Watson, William C. Spaulding, Edward Spaulding, Oscar F. Bathel, William Clough, A. P. Freeman, Jason W. Savage and Aaron Guernsey are some of our best farmers, and some of them keep large dairies, raise stock for the market of all kinds generally raised in the state. George M. Stevens gives his attention mostly to raising horses; there are none who give their attention to specialties.

2. Corn yielded heavier than common, though a very sure crop in this town; potatoes are raised by our farmers to considerable extent for starch purposes. Last year the plant was light but the crop very heavy; some land yielded over four hundred bushels to the acre. Wheat was better than common. Oats, which is a crop raised by all, were good, but the quantity less from the acre than usual on account of the drought. Hops yielded about a usual crop. Barley, rye, flax, peas, beans and root crops are raised to no great extent.

3. The raising of horses, sheep and cattle for market; products of the dairy; potatoes for starch; wool and hops.

4. We have no farmers' club; hope we may have a club organized in this town another winter.

5. We are not troubled very much by the depredations of insects. The weevil and onion maggot trouble us some; know of no remedy for weevil but early sowing, and salt for the onion maggot.

6. No commercial manures to speak of used except plaster, which is generally used in the hill for potatoes to a marked advantage.

7. Mowing-machines, hay-tedders, horse-rakes, horse-forks, horse-hoes, and a general improvement in all agricultural implements; saving at least one-third of the manual labor.

8. No one makes a specialty of raising blood stock. Many of us get a full-blooded animal and raise grades which are Ayrshire, Durham, Hereford, Devon and Jersey. The prices of neat stock and horses have advanced, I think, one-third in twenty years.

9. The product of corn is about the same per acre as ten years ago; potatoes, greater than at that period, but less than when the farms were new.

10. They have not been in the habit of attending the state or

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other fairs to exhibit stock or farm products, until now we have a county fair. One reason for not attending the state fair has been the expense and inconvenience of transportation; another is, we have no blood stock of consequence, and those who have the control of the state fairs pay little attention to grades, which, I think, are considered with us preferable for beef, work, or milk, to full bloods.

11. We are generally of limited financial means; having to work daily upon the farm ourselves we have little time for experiments or study. Many of us take agricultural papers which prove a great help, although they treat more of gardening, fowls, etc., than they do of the kind of farming which we practise here, on account of our poverty and remoteness from market.

12. We do not keep very minute accounts of the result of our practice and we experiment but little for reasons stated in No. 11.

SHELBURNE.

1. General farming and growing of hay, grain and stock.
2. Crops, about the average.
3. Grass and stock-raising.
4. No farmers' club.
5. No answer.
6. Superphosphates applied in the hill; quite satisfactory results.
7. Mowers, horse-harrows, improved cultivators and horse-rakes are used by some..
8. Low grades and native.
9. Much less in all named products.
10. Very few attend fairs; reason, lack of interest.
11. Some read, but few profit or attempt improvement on the "old way."
12. Do not keep accounts or try experiments.

STARK.

1. Hay, neat stock and horses, by Geo. W. Smith, S. Cole, John Roberts, J. A. and W. J. Pike.
2. Crops, full average quantity and excellent quality.
3. Stock, hay, lumber and government bonds.
4. No farmers' club.
5. Caterpillars; remedy, kerosene oil or strong salt water.

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6. Gypsum for potatoes, with good results.
7. Mowers, rakes and cultivators.
8. No full-blooded animals; some fine grade animals; one stock horse. Prices nearly doubled in twenty years.
9. Products generally better.
10. Had one county fair and the attendance good.
11. Generally take the agricultural papers.
12. A few keep farm accounts and try experiments.

STEWARTSTOWN.

1. Stock raising, hops, potatoes for starch, meats and grain by E. P. Tebbitts, A. M. Drew, S. G. Hannaford, E. M. Drew.
2. Crops, rather above the average.
3. Stock, cattle, horses and sheep and potatoes for starch.
4. No farmers' club.
5. Cabbage-worm; remedy, salt.
6. Plaster considered good on dryish soil.
7. All farming implements have been improved.
8. None pure; a mixture of different improved breeds.
9. Rather above the average for ten years.
10. Have not usually attended much.
11. Agricultural papers have some circulation but not large.
12. Not many keep accounts.

STRATFORD.

1. None that make a specialty of agricultural pursuits.
2. Crops, are about an average for past two or three years.
3. Lumbering.
4. No farmers' club.
5. Cabbage-worm is a little troublesome.
6. None used.
7. Mowers introduced on nearly every farm.
8. None.
9. No great change.
10. A few attend the county fair.
11. A few papers are taken.
12. No great interest taken in farming.

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WHITEFIELD.

1. George Harris, neat stock, potatoes for starch; Daniel Pillsbury, Benjamin F. Lane, Charles E. King, Samuel Bray, potatoes, wheat and oats; George McGregory, neat stock and horses; William F. Dodge, neat stock, horses, potatoes and grain.

2. Corn, above an average crop; hay, potatoes, wheat, an average crop; oats, below average.

3. Potatoes, raised for starch, is what the farmer makes a specialty and depends the most on that crop for his income. Some years as many as one hundred thousand bushels have been made into starch within a radius of six miles. The manufacture of lumber is the greatest business in the town, and is greater than any other town in the state. The people from the cities are also helping the farmers some by boarding through the hot weather.

4. We have no farmers' club, although I have tried to awaken interest enough to form one since I attended the agricultural meeting at Concord which I enjoyed very much; shall try to get up one another fall, if not before.

5. The weevil, in wheat; the maggot, in onions; the cabbage-worm and the pests which usually infest the garden. Use ashes, soap, gypsum, &c.

6. Gypsum and phosphate, applied to the hill for potatoes and corn, with good results. Gypsum sowed broadcast in grass and grain is a good investment usually.

7. Mowing-machines, horse-rakes and cultivators have been the means of farmers taking more pains to make their farms smooth and even and producing a higher state of cultivation. Also induced farmers to cut their hay earlier, thus saving time, labor and expense.

8. Have no blood stock. Horses and neat stock have advanced forty per cent.

9. I think fifteen to twenty per cent. greater, caused by farmers informing themselves as to the best methods of cultivation and "governing themselves accordingly."

10. To a small extent, as we have but just started a county fair.

11. They do, but not so much as they ought.

12. I am not aware of any who keep farm accounts, but experiments are made of various kinds in tillage and crops which are a success.

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These reports from towns, and especially the directness of the replies to some of the questions proposed, are suggestive of topics that require a more extended consideration than they have received. A part of them have been discussed fully and profitably by sub-committees, the full board and invited speakers during the past season, as will appear in the addresses, discussions and papers, under their appropriate heads in this volume.

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COÖPERATIVE ORGANIZATIONS.

The Board of Agriculture have designed to work in harmony with all kindred organizations and to second every means instituted by individuals and corporate bodies that will tend to develop the resources of the state and contribute to the happiness or prosperity of the people. We have thus far visited as many fairs as possible and taken means to ascertain the condition and influence of state, county and town societies. In this connection we give reports of the various fairs and the organizations under whose patronage they have been held, beginning with the New England Society and the New Hampshire State Society which held a fair in union in the first week of September.

THE NEW ENGLAND SOCIETY.

In the spring of 1864, several gentlemen interested in stock and farming improvement proposed the formation of an association embracing the Eastern states, with the object of promoting the general cause of agriculture. A call was issued and a large number of gentlemen assembled at Worcester and organized the New England Agricultural Society. Dr. George B. Loring, of Salem, Mass., was chosen President, and Col. Daniel Needham, of Groton, Mass., Secretary, which offices they have respectively held to the present day. Isaac K. Gage, Esq., of Fisherville, was chosen Treasurer, and held the office until January, 1870, when he was succeeded by Col. George W. Riddle, of Manchester. Among the Vice-Presidents, ex-Gov. Smyth has held a place from the organization of the society, and D. H. Goodell has been the New Hampshire Director.

The first fair was held in 1864 at Springfield, Mass., and annual

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fairs have since been held at some prominent point in each of the states. The second fair was held in our state, at Concord, in 1865. This was followed the next year by one at Brattleboro'; then in 1867 by one at Providence. In 1868 the exhibition was at New Haven, and in 1869 at Portland.

These fairs were all fully represented by the best stock in New England, and by multitudes of the stock breeders and farmers of the country.

According to the custom, Massachusetts would have claimed the location in 1870, but there was no earnest competition, and our state succeeded in securing the honor of the show which was held at Manchester.

NEW HAMPSHIRE STATE AGRICULTURAL SOCIETY.

The State Society was formed in December, 1849, on call and action of some of the most eminent agriculturists in the state. Hon. George W. Nesmith of Franklin, was the first President, and Col. John S. Walker of Claremont, Secretary. Among the prominent officers were Vice-Presidents Dr. P. P. Woodbury of Bedford, Salma Hale of Keene, John H. White of Lancaster, E. J. Glidden of Unity, A. P. Cate of Northfield, Noah Martin of Dover. Of the Executive Committee were Josiah Stevens of Concord, Adam Chandler of Bedford, Joseph Sawyer of Piermont and Israel Hunt of Nashua. N. B. Baker, of Concord, was Treasurer.

The Presidents of the society have been George W. Nesmith, P. P. Woodbury, E. J. Glidden, N. B. Baker, William F. Estes, Frederick Smyth and Natt Head. The Secretaries have been John S. Walker, James O. Adams, J. C. A. Wingate and Aaron Young; Treasurers, N. B. Baker, Frederick Smyth and George W. Riddle.

The society has held fifteen fairs; at Concord, three times; at Laconia, once; at Keene, once; at Dover, twice; at Nashua, twice; at Manchester, six times. The amount of money expended for premiums, publication of matter, and necessary expenses of fairs, is not far from $150,000. The society has published nine volumes of transactions, containing about four thousand

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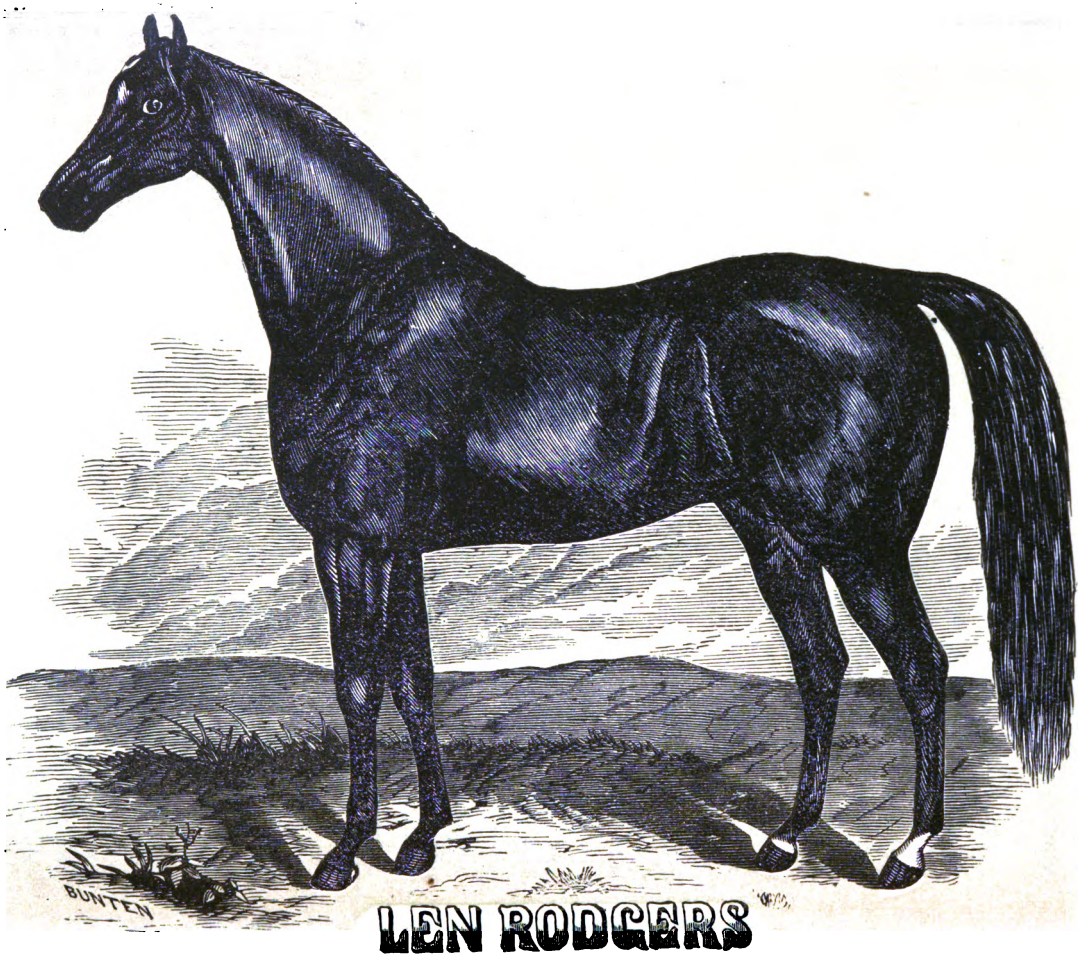

LEN RODGERS

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printed octavo pages, in which it has been assisted by the state. It is in a thriving pecuniary condition, with money in its treasury, and is likely to be productive of greater good in years to come.

THE UNION FAIR, 1870.

At the union fair of these large societies in September last there were three prominent features, viz: the neat stock, the superior horses, and the large show of agricultural implements. There were other features which were worthy of commendation, though by no means superior. The show of fruits and flowers was good, as was that of vegetables and farm products generally, but in neither department were the expectations of the people fully realized; while in the departments of manufactures, household fabrics, fancy work, the fine arts and curiosities there was a sad deficiency.

In the live stock entries there were recorded seven hundred head of neat cattle, three hundred horses and three hundred sheep and swine.

It was pecuniarly a success, having been visited by not less than sixty thousand people, and received in membership, admission fees and entrance money, about $27,000.

HORSES.

The show of horses was large and very fine. The leading trotting stock was the Morrill, which is among the best in New England. Young Morrill, twenty-one years old, the sire of the fastest stock horse in New England, Fearnaught, was present and exhibited on the track.

The best representative of the Morrills owned in this state, that we have seen, is the Gen. Lyon. He has the quick motion, compact form and handsome outlines of the Morgans, the strong limbs, powerful, muscular development and trotting qualities of the Morrills.

The Cassius Clays and the Honest Allens, both fast trotting breeds, were not so largely represented at this fair as they have been in years past. The Abdallahs were present by good representatives of the stock.

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The other classes of horses were quite as well represented as that of stallions, there being excellent carriage animals, trotters, workers, and superior mares and colts.

NEAT STOCK AND OTHER ANIMALS.

The show of neat stock was, probably, the largest and best ever made in this section of the country, if not in the United States. The Secretary has seen many cattle, attended many fairs, far and near, in our own country and in England, and has never yet found the different breeds more fully represented, or seen better specimens of each breed. Every known and acknowledged valuable class was represented; to be sure, the hornless Galloways were wanting, and so were the yellow-skinned Danish animals, and the Spanish, with their descendants the Texans, wild and worthless beasts. But these are out of the recognized stock at shows.

The swine were not abundant, but of excellent quality, several giants being among the specimens presented. The Chesters seemed to prevail.

The show of sheep was limited, but of superior quality. There was scarce an animal from our own state in this department.

Poultry was not so fully exhibited as the many poultry yards in our own state, and not far remote, demanded.

FARMING IMPLEMENTS.

The large amount of implements gave very satisfactory evidence that farmers are progressing in the manner of performing the labor upon their farms, for these varied utensils would not be made if there was no demand for them by the operators of the farm.

The many mowing-machines, each with its peculiar merits, have relieved the farmer of the burden of swinging the old hand scythe, in a great degree, and enabled hay-makers to cure their grass better and more expeditiously. No large farmer now thinks of doing his haying without a mower of some kind.

So, too, with the tedder, though as yet but little used in New England. It is acknowledged to be an important aid in the curing of hay. It stirs it up thoroughly, lets in the air and sunlight, and causes it to dry evenly throughout.

The horse hay-rake, though used for many years in some form,

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has been so much improved of late as to become, in fact, a new thing. It is now so constructed as to rake close to fences, around trees and other obstacles, and to be lifted easily over stumps and stones without dropping the burden already gathered in its course.

The improvement in plows is marvellous. Look at the old wooden mould-board, and at the scientifically shaped steel substitute that now does the work. See the change in the wood-work; note the pitch of the handles, the shape of the beam, the regulators accompanying, and all the recent modifications which the plow has received during the last quarter of a century.

Harrows, too, for many years confined to the old letter A form, are now constructed in circular form, in a square, and in combination. The revolving harrow is one of the improvements of recent date which promises much assistance in pulverizing the soil. An equally important improvement is the harrow and roller combined.

Then we have a potato digger, which it is claimed will turn out and shake the dirt from acres of potatoes in a day.

The whole series of machines run by the new centrifugal power affords another illustration of the advancing spirit of the farmer and the mechanic. The ease with which a man of muscle will turn the crank to a cider mill, a thresher, a sawing-machine, or any other machine run by this power, shows how great may be the saving over the ordinary hand process, and how very great over that of steam or horse power. In addition to this, the fact that either horse or steam power may be applied makes the process still more essential. If there is nothing new in the principle there is an advantage worthy of notice in the application.

We may name, in this connection, churns, washing-machines, wringers; and in connection with haying tools, we ought not to have omitted the horse pitchfork, which is almost indispensable to the large farm. We might go on and name other implements, but those given may be taken as a representation of the many more which are already in use, and are more readily adopted at the present time than ever before.

The only danger is that farmers buy some farm implements without proper consideration, and suffer a loss rather than realize a profit from the investment. The intelligent farmer will adopt every real improvement, but he will thoroughly investigate before he ventures too far.

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ROCKINGHAM COUNTY FAIR.

[Reported by the Secretary of the Board.]

The annual fair of the old Rockingham Society, which usually meets at Exeter, and has hence been sometimes designated as the Exeter Society, was held in the usually still, rural town of Kingston, at Towle's Riding Park.

The location in itself was very good, though with reference to accommodating the whole county, or that part represented in the society, it was not the most desirable place for the exhibition. Besides being in a comparatively small town, which could not contribute greatly to the show, it was three miles distant from railroad communication.

The fair opened on Thursday, September 22, and continued three days. By a little past noon of the first day the entries were made, the committees filled at once, and work was commenced in the afternoon. The managers showed much ability in making such progress during the opening day, having done half the work in the time usually devoted to arranging.

On the second day, which was accounted the best, the Secretary spent a few hours on the ground, examined the horses, neat stock, and other animals, took a hasty view of fancy articles, lingered a while among the fruits, witnessed a few heats of a fair trot, and at an early hour took the homeward train.

The number of horses entered for competition in the various classes and for the races was large, among which were some superior animals. No positive time was made, the track being light, and not exactly a half mile in circuit.

There was a fair show of neat stock, some of the fat cattle and many of the working oxen being unusually good. There were two pens of swine, only one of sheep, and quite a show of poultry, though some of it, labelled as special varieties, was terribly *mongrelized*. The fruit show was fair, but not so large as it might have been. The corn show was excellent, the dozen or fifteen traces exhibited being sound, heavy and bright. Vegetables were not abundant. There was some butter and cheese and a few specimens of bread, but not much in either line. Agricultural implements, as usual, were well represented. The attendance on the second day was large, and the funds of the society liberally increased by the patronage of the fair.

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On the whole, the Kingston Fair, though not as good as Rockingham County ought to make, was better in many respects than we anticipated, and, under all circumstances, may be regarded as a success.

We regret, however, to learn that the expenses were so heavy, that the entire revenue of the society was exhausted; that at a meeting for the choice of officers, during the winter, no election was made and the organization, which originated twenty years ago, and was one of the most vigorous in the state, is likely to be inoperative hereafter.

The officers were Darius Towle, of Kingston, President; A. J. Hoyt, of Exeter, Secretary; N. E. Tuck of East Kingston, Chief Marshal; C. G. Taylor, Superintendent, and Jacob Carlisle, of Exeter, Treasurer.

PISCATAQUA SOCIETY.

[Reported by F. W. Miller, Esq., Portsmouth.]

The Piscataqua Agricultural Society was organized at Portsmouth, October, 1866; and includes Rockingham County, and the towns of Kittery, York and Eliot in Maine. The original Trustees were Frank Jones, Henry R. Stoddard and John H. Ferguson, by whom the business of the society was managed for about three years, until the incorporation of the society in 1869. Frank W. Miller was Secretary, and William H. Hackett and Josiah G. Hadley severally Treasurers.

The capital of the society is $5,000, in fifty shares of $100, and is owned in single shares by leading citizens of Portsmouth mainly. The Piscataqua Park is situated about three miles from the city, and within half a mile of the Eastern and Concord railroads. The grounds comprise twenty-two acres of sandy soil, on which is a beautiful growth of pine and other trees, and a bountiful supply of the purest water from two wells. A fine half-mile track has been built with a large exhibition building one hundred by fifty feet, ample stables, and covered and open pens, &c. This park is the most beautiful in the state, and has cost with all the improvements more than $10,000.

The first fair was held in October, 1867, when the amount of

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premiums offered was about $3,000. John H. Bailey was President, M. Eldredge, Treasurer, and H. F. Wendell, Chief Marshal. This show was held on the same days as the Rockingham Fair at Exeter. The Piscataqua society that year offered no premiums for anything except live stock; and the display of neat stock and horses was creditable. The sum of $1600 was netted, and the three days' exhibition highly enjoyed by a large attendance. There were twenty-six yoke of heavy cattle on the grounds, pronounced the finest display ever made in the state. C. Hayes and Son and Frank Jones of Portsmouth, and J. H. Butler of Nottingham, were chief exhibitors.

A National Horse Fair was also held here in November, 1867, under direction mainly of Boston parties. The purses offered amounted to $4,000, and three days' fine sport was presented, but the weather was too cold for enjoyment or extensive attendance.

The second fair of the Piscataqua Society was held in September, 1868, and the list of premiums included manufactures and fancy work of all sorts, crops, &c., as well as live stock. James H. Butler of Nottingham was chosen President of the fair this year, and has always been an efficient worker for the society. C. H. Hayes was Secretary, and N. F. Mathes, Treasurer. The fair was one of the most creditable county shows ever made in the state, in all departments, and the display of neat stock very large. Portsmouth town team numbered thirty-two yoke, Eliot thirty-one yoke, Newington forty-five yoke, Greenland fifty-eight yoke, and Nottingham eighteen yoke, — these last all belonging to James H. Butler, and probably the largest display ever made by a single individual in the state, if not in New England. There were in all one hundred and eighty yoke of handsome cattle on the grounds, believed never to have been excelled in New England. But the cost of keeping so vast a herd and their drivers was so great as to consume so much of the receipts of the fair, that the funds of the society were nothing bettered, but rather grew worse, from this second fine annual exhibition. The large and excellent herd of Durham stock, belonging to Col. J. W. Pierce of Greenland, was much admired; and the premiums offered thereon, amounting to $66, were generously donated to the society. Col. Pierce also showed the society similar favors the next year, and Messrs. Frank Jones, M. Eldredge and other gentlemen have repeatedly aided the treasury in this manner.

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In 1869, the society being incorporated under the general act, the Trustees' duties ceased and the following officers were chosen: President, Frank Jones; Directors, M. Eldredge, H. R. Stoddard, J. H. Ferguson; Secretary and Treasurer, Frank W. Miller.

A fair and cattle show was held in September; and a trotting meeting in August previous, at which latter $1000 was offered in premiums. About $3000 has been the amount of premiums offered at each of the annual fairs of this society, of which the premiums and purses for horses constitute probably fully one-half. For this fair James H. Butler was chosen President, C. H. Hayes, Secretary J. H. Jenness, Treasurer, and Frank W. Miller, C. Mason and Benning Morrill, Trustees. The fair this year was thrown open to the world, but few entries were made outside the limits of the society. Mr. Butler being absent from the state on business, was unable to attend the fair; but the duties of president were ably performed by Mr. Jones, President of the society. This third show was a very creditable exhibition, but owing to rainy weather and very heavy expenses was a source of no pecuniary gain to the society.

At the annual meeting November 14th, 1870, it was voted that the regular officers of the society be also managers of the fairs; and that the board consist of a President, a Secretary and a Treasurer. The following gentlemen were chosen, who still hold over until their places shall be filled: President, Frank Jones; Directors, H. R. Stoddard, M. Eldredge, Haven L. Scott; Secretary, C. H. Hayes; Treasurer, C. Mason.

The fourth annual fair was held in October, was successful in all respects, and resulted in adding a few hundred dollars to the funds.

The Piscataqua Society is composed of some of the most substantial citizens of Portsmouth and neighboring towns, and their property, as stated, has cost $10,000 or $12,000, on which there is a debt of about $3,000. They will probably hold a fair the coming fall.

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STRAFFORD COUNTY AGRICULTURAL AND MECHANICAL SOCIETY.

[Reported by Noah Tebbetts, Esq., Rochester.]

This society was organized in the summer of 1867, by an association of gentlemen of the different parts of the county, prominent among whom were Hiram R. Roberts of Rollinsford, O. H. Lord of Somersworth, J. F. Lawrence of Lee, A. H. Young of Dover, Chas. Jones of Milton, J. H. Ela of Rochester and Chas. A. Foss of Barrington. Hon. Hiram R. Roberts was the first president of the society, and J. F. Lawrence the first superintendent; and by the interest taken in the society, and perseverance and energy displayed by them, contributed very largely to the prosperity and success of the society when in its infancy.

The gentlemen who now take an active interest in the welfare of the society, with many others, are S. C. Fisher, Moses D. Page, A. J. Hodsdon, of Dover; S. S. Chick, John S. Haines, of Great Falls; Noah Tebbetts and C. S. Whitehouse, of Rochester; Elisha Locke, of Barrington; Wm. R. Garvin and H. R. Roberts, of Rollinsford; John F. Cloutman and Alonzo Nute, of Farmington; A. G. Orne, of Middleton; Luther Hayes, of Milton; N. G. Davis, of Lee, and Wm. F. Jones, of Durham.

In 1867 the society expended for premiums the sum of $1100.00, and the expenses amounted to $2451.63.

In 1868 the society expended for premiums $1050.00; expenses, $2542.25.

In 1869 the society expended for premiums the sum of $2200; for expenses, $2185.

In 1870 the society expended for premiums the sum of $899.50; for expenses, $1650.50.

The receipts of the society have been as follows: 1867, $3981.15; 1868, $3279.07; 1869, $3985.00; 1870, about $2800.00.

In 1867–68 and 70, the fair was held at Dover, and in 1869 at Great Falls.

In 1870 the premiums paid for horses amounted to $106.00; for horse trotting, $424.50; for neat cattle and town teams, $197.00; for sheep, $6.00; farm products, $26.00; for fruit, $60.00.

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Our last fair was not of much interest, save as relates to the horse trotting. The show of cattle, horses, sheep and farm products was very small. The best feature of the last fair was the display of fruit, which was very large and attracted much attention.

The fairs would be improved if larger premiums were offered for neat cattle, sheep and products of the farm, so that our farmers could feel that there was a chance of their deriving some benefit by exhibiting their stock and farm products, and to dispel the idea that all the money goes to maintain an "agricultural horse-trot."

PRESENT OFFICERS.

Samuel C. Fisher, Dover, President; N. G. Davis, Lee, Elisha Locke, Barrington, Vice-Presidents; Ezra H. Twombly, Milton, Secretary; Ira S. Ricker, New Durham, Treasurer; Noah Tebbetts, Joseph Nutter, Rochester; S. C. Fisher, M. D. Page, A. J. Hodsdon, Dover; S. S. Chick, John S. Haines, Somersworth; Elisha Locke, Barrington; R. B. Peavey, Strafford; John F. Cloutman, Farmington; A. G. Orne, Middleton; E. H. Twombly, Milton; Ira S. Ricker, New Durham; David O. Cate, Rollinsford; N. G. Davis, Lee; Ira A. Locke, Madbury; Wm. F. Jones, Durham, Directors.

[Reported by Dr. Mason, Member of the Board.]

Agreeable to appointment, I attended the Strafford County Fair holden at Dover, on the 13th, 14th and 15th of September, 1870. The fair, on the whole, was a success, though it did not come up to the standard of previous shows in that county. This falling off was, probably, in consequence of local disaffection, which is so likely to cripple such enterprises, and which should be strenuously avoided. Every county society should have the location of the exhibition permanently and harmoniously fixed; by this means the great source of disaffection is removed.

The tent containing articles of industry, machinery, fruit and fancy articles was well filled and did great credit to those by whom it was managed.

The cattle show was fair, though not of a very high order; yet there were some fine specimens of blooded animals. H. R. Roberts, of Rollinsford, exhibited a beautiful Durham year old bull weighing one thousand and sixty-five pounds, spotted, red and

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white; one Durham heifer weighing eight hundred and seventy-pounds, spotted, white predominating; also one Durham cow, that gave at that time twenty-two quarts of milk daily. He had also, on exhibition, one two-year-old Durham bull weighing one thousand two hundred and forty-seven pounds. These were all fine specimens of the Durham stock, and where size is desired are not surpassed by any other blood.

Lorenzo Stackpole, of Rollinsford, had some very good specimens of Ayrshire; one cow, six years old, weighing one thousand four hundred and seventy-five pounds, giving daily twenty-two and a half quarts of milk. Mr. Stackpole has had some experience with the Ayrshire and Durham; thinks there is not much difference in the two, so far as size is concerned; thinks the Ayrshire affords better beef.

The Strafford County Farm had on exhibition a year old bull weighing one thousand and twenty-five pounds, obtained from the Pierce farm, well made and a good specimen of the Durham stock.

The Dutch blood was represented by animals of S. J. Smith, of Dover, and Benj. Hussey, of Great Falls. These cattle have no claim to recommendation for beauty, being spotted with black and white, but are said to be noted for their growth and hardiness, being good feeders, and not dainty like many other breeds; they will thrive upon coarse feed upon which other breeds will famish.

The Jersey breed was also represented. All that can be said in favor of this breed is, "they are good milkers;" their reputation does not rest so much upon the quantity as the quality of the milk.

HILLSBOROUGH COUNTY AGRICULTURAL AND MECHANICAL ASSOCIATION.

[Reported by C. S. Averill, Esq., Secretary of the Society.]

The original society in the county of Hillsborough, which existed a half century ago, like all the original associations, lost its primary interest and in a few years ceased to maintain its organization. In 1846 and 1847 meetings were held at Amherst, Milford and other accessible places, and a re-organization effected which continues at the present time.

The first fair after the re-organization of the old society was held at Milford the last week in September, or the first week in

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October, 1849; second fair was held at Amherst in 1850; third fair was held at Milford in 1851; fourth fair was held at Nashua in 1852. With the exception of one fair, held at Manchester, the fairs from this time down to its permanent location at Milford were held there.

Presidents — Dr. P. P. Woodbury of Bedford, Ex-Gov. John H. Steele of Peterborough, Brooks Shattuck of Bedford, John M. Tyler, Moody Hobbs of Pelham, P. M. Rossiter of Milford, B. F. Baker of Wilton, Dexter Greenwood of Hollis, Abel Chase of Milford, James U. Prince of Amherst, B. F. Hutchinson, Jonathan B. Moulton of Milford.

Originally the whole county was embraced in the society. About 1858 the question of the expediency of dividing the county into two sections for the convenience of exhibitors was agitated, and resulted in a permanent division.

Addresses have been delivered occasionally.

The society has met with some misfortunes since its location at Milford. First, by the breaking down of its building by snow; second, by the destruction of the second building by fire; a third was erected which is now standing.

The amount paid in premiums for 1869 and 1870, the two years during which I have been Secretary, are as follows:

1869, premiums paid, $331.00; expenses, $1,000.19. 1870, premiums paid, $309.69; expenses, $1,261.39. Paid in 1870, premiums on horses, $45.00; neat cattle, $82.00; sheep, $1.00; farms, $43.00; farm products, $20.00; implements, diplomas, household manufactures, $17.00.

I think the best feature of the fair of 1870 was fruit. Vegetables were very good; the show of neat stock and horses was also pretty good; sheep and swine were the poorest features. An improvement in the exhibition might be made by bringing all articles for exhibition to the grounds and having them arranged the first day, in order for committees to have a suitable and proper time to examine them. Another improvement would be a prompt attendance of committees to their duties.

PRESENT OFFICERS.

Jonathan B. Moulton of Milford, President; V. C. Gilman of Nashua, Ira Gage of New Boston, Zebadiah Abbott of Wilton, John Richardson of Lyndeborough, Vice-Presidents; C. S. Averill

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of Milford, Recording and Corresponding Secretary; F. T. Sawyer, Treasurer; J. B. Moulton, John Marvell of Milford, John L. Poole of Hollis, B. F. Steele of Wilton, James G. Hazelton of Amherst, Executive Committee.

CONTOOCOOK VALLEY AGRICULTURAL AND MECHANICAL SOCIETY.

[Reported by Daniel Johnson, Esq., Secretary of the Society.]

This society was organized at Francestown, May 28, 1859, by choosing Col. Hiram Monroe, of Hillsborough, Chairman, and John F. Chase, of Deering, Secretary. The following meeting was held at North Weare, where it was decided to locate the fair for two years.

A half-mile track was made at Purinton's Park, by voluntary subscriptions, and the fair continued to be held at that place until 1865, when it was voted to hold it at Hillsborough Bridge, where it has since been held. The society incurred an expense the first year, which was increased the second, when a few individuals were obliged to give their note, and trust "for better days," which did not come until the fall of 1866, when the receipts were enough to pay all premiums and the debt.

Among the prominent men who were connected with the fair in its earliest days, we find Moses A. Cartland, President (deceased); John F. Chase, Secretary, who has held the same position until the last annual election; Erastus H. Bartlett, Treasurer, who has since been Vice-President and Marshal, as well as an exhibitor at every fair since. The following year Simon G. Gove was elected President, who held the office two years, also, George Simons, Treasurer; both were prominent exhibitors as long as the fair continued at Weare.

The next change in officers was the election of J. N. Currier as Treasurer, who has always been an exhibitor. In 1864, Herod Chase was elected President, and held the office two years. He has always been an exhibitor, and several times Chairman of the Committee on Field Crops. The following year J. C. Campbell

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was elected Treasurer, and has held the office acceptably. At the last election he declined a re-election. In 1865, S. Dow Wyman was elected President and held the office two years. In 1867, Horace Gove was elected President; being an admirer of nice oxen, he has been ambitious to get up town teams, for which the fair is said to surpass any other in the state. In 1869, Cornelius Cooledge was chosen President and remained in office two years.

Among those who have labored by word and deed for the society we find Z. Breed, the original mover of the society. He labored hard to promote the agricultural interest of the society while at Weare, and never let an opportunity pass for for denouncing the custom of giving so much money to "fast horses." Of prominent exhibitors we find J. B. Moulton, Otis Chase, S. S. Clark, Hiram Brown, H. Merrill, Hiram Grimes, B. Priest, D. A. Tewksbury, J. B. Philbrook, and many others who annually attend the fair, bringing the products of the farm.

We expend in premiums and expenses annually, $1,200. The past year our awards were

For trotting and running horses, $221; horses, $75; neat cattle, $300; sheep, $25; farm products, $85; implements, $50; household manufactures, $50; poultry, $35; swine, $35.

The best feature of the fair is neat stock; poorest, swine.

PRESENT OFFICERS.

President, Moody McIlvin, Antrim North Branch; Vice-Presidents, Erastus H. Bartlett, East Deering, William Merrill, Hillsborough Bridge; Secretary, Daniel Johnson, Weare; Treasurer, Edwin P. Morse, Hillsborough Bridge.

CHESHIRE COUNTY SOCIETY.

[Reported by Dr. Thomas E. Hatch, Secretary.]

In reply to yours of April 3d, I can only say that I regret that I am unable to give you as full a report of the early history of the Cheshire County Agricultural Society as you desire. I find no records of the society previous to 1850, although "cattle shows" were held here many years before that time. In 1850, Hon. Sal-

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ma Hale (the historian) was elected President of the society. In 1851, Hon. Samuel Dinsmoor was chosen to the same office, which he filled until 1853, when Thos. H. Leverett, Esq., was elected. A change was made in the society in 1854 and a new constitution adopted; David Buffum, Esq., of Walpole, was elected President, who held the office two years and was succeeded by Col. Nelson Converse, of Marlborough in 1856, who was continued in office until the annual meeting in 1861, when, having been appointed colonel of the sixth regiment of New Hampshire volunteers, Hon. Wm. Haile, of Hinsdale, was elected President, and has been re-elected annually since that time.

The success of the society has depended in years past, to a great extent, upon the energy and zeal manifested for it by Thos. H. Leverett, Esq., who acted as Treasurer fourteen years, and held other offices in the society nearly as many more.

In 1854 the society purchased the fair grounds, now owned, west of the village of Keene, and fitted them up for the use of the State Agricultural Society, which held a fair here that year In 1862, it was voted to hold no fair, and in 1867, the Connecticut River Valley Agricultural Association was allowed to hold a fair on these grounds, this society holding none. With these exceptions, this society has held its annual fairs with varying success, but usually giving satisfaction to the members and the public.

In 1870, a new constitution and code of by-laws were adopted, and the society made a change, which its friends hope will be for the better. Hitherto, the energies and funds of the society had been spent for the purpose of affording such pleasure and improvment as could be obtained from the annual fair and exhibition. Upon re-organizing the society, membership fees were raised to five dollars, which sum allows a free entrance to all the exhibitions, together with the privilege of exhibiting any animal or article without further fee and the use of the male animals owned by the society, under certain rules established by the officers. The membership fees form a fund for the purchase of animals, plants, seeds, etc., for the use of the members. The society now owns two thoroughbred bulls and a Chester county boar, and intend during the present season to purchase other animals.

Expended yearly for premiums, about $850; travel fees, $150;

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other expenses, $1000. The last sum included about $200, paid as interest and principal on debt.

Amount offered in 1870, on horses, $129; neat cattle, $268; sheep, $122; swine and poultry, $32.50; products, $80.50; implements, $24; household manufactures, $136.50; fruit and vegetables, $38.50; manufactures, $103.50; plowing, $21. These premiums were not all awarded, about $100 falling short: we have never offered any premium for farm improvements.

PRESENT OFFICERS.

Wm. Haile, Hinsdale, President; Geo. B. Twitchell, Keene, S. W. Buffum, Winchester, Jona. S. Adams, Fitzwilliam, Vice Presidents; Thos. E. Hatch, Keene, Secretary; O. G. Dort, Keene, Treasurer; Henry Fletcher, Chesterfield; Norman U. Cahill, Fitzwilliam; Daniel Smith, Gilsum; Albert A. Thayer, Hinsdale; Daniel P. Adams, Jaffrey; Charles N. Wilder, Keene; Jairus Collins, Marlborough; Noah W. Hardy, Nelson; Elliot C. Winchester, Sullivan; Geo. K. Harvey, Surry; Luther S. Lane, Swanzey; Edward P. Kimball, Troy; Gilbert T. Stevens, Walpole; John A. Chamberlin, Westmoreland; Geo. W. Pierce, Winchester, are the Executive Committees.

[Reported by Mr. Buffum, Member of the Board.]

The annual exhibition of the society was held on Tuesday and Wednesday, Sept. 6th and 7th, 1870. The show of animals was not as large as in former years, owing in a great measure to the long continued drought, which reducing the feed left the farmers in many of the towns of the county with only lean kine. There were, however, one hundred and twenty entries of cattle, among which were forty-three thoroughbred animals. These were all Durhams and Alderneys. Among them were some of the best bred animals in the state. The premiums on Durhams were distributed among the towns of Chesterfield, Sullivan, Winchester and Roxbury; while those on Jerseys went to Surry, Marlborough and Winchester. Of the mixed breeds there were only thirty-six entries of cows, heifers and calves. These animals showed a decided superiority over those shown on the same ground a few

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years since in size, form and milking qualities. The fat ox exhibited by Mr. John Colony, of Keene, who had fed him, excited the admiration of all visitors. He is a grade Durham, weighing, as estimated by good judges, about three thousand five hundred pounds, and measuring in girth nine feet and two inches, being the heaviest animal ever raised in this state. There were several other entries of fat cattle, which did credit to their feeders.

There were twenty-six entries of working oxen and steers, all of superior class. This section of the exhibition was decidedly inferior in numbers to those of the previous years. This society always has an interesting plowing match, an exhibition of strength of oxen, which affords an excellent opportunity for the drivers to show the training of themselves and teams.

The interest in horses has increased in Cheshire county as in other parts of the state, there having been sixty-six entries, including many promising animals. The "agricultural horse-trot" commands as prominent a place in this society as in others, and seems to be the chief attraction to a large class of our citizens. The show of sheep was small, there being but seventeen entries, comprising about fifty animals, mostly of the coarse wool or mutton varieties. Those exhibited were of superior merit and indicate a decided advance in breeding within a few years. But very few specimens of swine or poultry were exhibited, our farmers not paying as much attention to the breeding of those animals as their importance demands.

The display of fruit and vegetables was less this year than ever remembered, the display of grapes and peaches alone being about as large as usual. There was a large display of manufactured and fancy articles, many of them showing a high degree of skill in construction and finish. Upon the whole, the exhibition, although not equalling some held in former years, was a satisfactory proof that this society is still active and useful, the whole number of entries being four hundred and eleven and the amount of premiums offered being more than one thousand dollars. The society owns twenty-six acres of land, and well-appointed buildings and pens.

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THE ASHUELOT SOCIETY.

[Reported by S. M. Morse, Esq., Secretary of the Society.]

In the summer of 1863 a few public spirited men organized themselves into a society for the purpose of buying land and putting it into condition for holding agricultural fairs. The names of those gentlemen were as follows: O. Sprague, H. B. Swan, G. W. Pierce, I. F. Alger, D. S. Swan, W. C. Owen, John Hutchins, O. L. Howard, A. S. Follett, all of Winchester. They framed a constitution and by-laws and called the society the "Stock-breeders and Mechanics' Association," of the Ashuelot valley, fixed the price of shares at $25, purchased a tract of land about a mile east of the village of Winchester and inclosed it with a substantial fence, built a first-class half-mile trotting course; a hall for the display of fancy goods, household manufactures, fruits, vegetables; cattle pens, ticket office, &c. The first board of officers chosen were: President, W. C. Owen; Vice President, I. F. Alger; Secretary, D. S. Swan; Treasurer, O. Sprague; Directors, Geo. W. Pierce, John Hutchins, H. B. Swan.

The first fair was holden Oct. 6th, 1864, for one day, and although the day was unpleasant there was a pretty good display and a fair attendance from Winchester and the neighboring towns. In 1866, the society was incorporated by the legislature. Ever since 1864 the society has had a two days' exhibition every year, and there has been a good degree of interest manifested by the people of the Ashuelot valley in the success of the society. The amount of money expended yearly in premiums and necessary expenses is from $800 to $1000; for horses, $75; neat cattle, $230; sheep, $17; farm improvements, nothing; farm products, about $50; implements, $25; household manufactures, $50; swine, $16; miscellaneous, $300.

The best feature of the fair was decidedly the show of working oxen; the poorest feature I leave for the gentlemen of the board of agriculture who were present to designate.

The names of present officers are S. W. Buffum, President; H. B. Swan, A. Dickinson, Vice-Presidents; S. M. Morse, Secretary; Henry Abbott, Treasurer; D. S. Swan, F. Weeks, John Hutchins, Winchester, M. B. Shaw, Chesterfield, N. G. Gurnsey, Keene, E. E. Lyman, Keene, Directors.

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[Reported by J. F. Lawrence, Member of the Board.]

In company with Mr. Jones, I visited the Ashuelot Fair, at Winchester. We were both highly pleased with the exhibition. The grounds are owned by the society, and are neatly fenced, with a fair track, seats and stands, fine cattle pens and exhibition building, while beautiful shade trees are growing in those places upon the grounds not needed for other purposes.

While the claims of the horse are sufficiently recognized here, still it was evident that the managers' idea was to make it an agricultural fair, in name not only, but in fact, and I have never visited any exhibition where old men and young, women and maidens seemed so thorougly in earnest, and determined to make the occasion a pleasing one to all who attended it.

The perfect absence of "put-up jobs" and packed committees was a pleasing novelty in these days, no one seeming to want a premium unless he really deserved it. The people of Cheshire county seemed to consider it a "gala day," and it was really pleasing to see the people at noon-time, separated into small groups, making picnic parties so attractive as to cause sadness that one could not attend them all.

I think that Cheshire county is hardly equalled by either of her sisters, in Durham stock. Yardful after yardful of beautiful cows, so large, sleek, and with so many fine points, that we wondered by what rule the judges would be governed in affixing the insignia of superiority upon the lucky recipient.

But the noble working oxen were the crowning glory of the exhibition. I have hardly ever seen such a collection, and I never witnessed such feats of drawing, as I saw that day upon the grounds of the Ashuelot association.

The exhibition building was fairly filled, and the contents splendidly arranged, while the beautiful piano "made music all the day," showing that the ladies of Cheshire county are as accomplished as they are beautiful.

In the evening, after a lively meeting of the society, there was a social party at a fine residence in the village, which was really one of the finest entertainments I ever attended. The people of Cheshire county know how to entertain strangers. Their only fault is that they do too much for them.

Really, Mr. Secretary, upon the whole, I was very much

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pleased with my visit to Cheshire county, with the people and their resources, and if, amid the division, it shall be my lot to visit the Ashuelot valley at its next exhibition, I shall be entirely satisfied with the fate which has befallen me.

MERRIMACK COUNTY SOCIETY.

[Reported by the Secretary of the Board.]

The Merrimack County Agricultural Society was organized in 1824, the oldest in the state which has continued in active life, in which year its first fair was held, in Concord. From that date to 1858, inclusive, the year in which the county was created by legislative act, with few exceptions, annual exhibitions were given in various places in the county. In 1859, the society started anew, under an act of incorporation from the legislature, and held an annual fair in Concord. Aware of the importance of possessing permanent grounds and fixtures for the use of the association, the board of managers, in the spring of 1860, resolved to purchase a lot of thirty acres on the "Pine plains," so called, on the east side of the Merrimack river and about one mile from the State House. In view of the benefits which agricultural fairs confer upon the business interests of the place in which they are held, the officers confidently appealed to the enterprising citizens of Concord for contributions towards the purchase of the land. The response was cheerful and extremely gratifying, the whole sum given being $1,766.50, an amount sufficient to pay for the land and leave an excess of over $1,000, towards clearing and fitting up the grounds. The first fair on the new location was held in 1860, and was a complete success. The result of the exhibition the following year was equally satisfactory to the board of managers. On account of the war, and the occupation of the grounds by United States troops, it was not thought advisable to hold exhibitions in 1862 and 1863. Successful fairs were, however, held in 1864 and 1866. In 1865 the use of the grounds was extended to the New England Agricultural Society, whose celebrated exhibition that year was one of the finest ever given in this country. Since the fair of 1860, many permanent improvements have been made upon the new grounds of the society, whose conveniences

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and accommodations for agricultural shows are not excelled by any other association in the state.

J. E. Lang, Esq., of Concord, the efficient secretary of the society, has furnished us with a printed report of the receipts and expenditures of the society, by which we learn that the amount of the expenditures, taking the years when fairs have been held, is not far from $2,500 per annum. Mr. Lang adds:

"The amount expended in premiums in 1870 was $1000, as follows: On horses $123, cattle $283, sheep $83, farm implements and products $103, trotting premiums $235.

"The time of holding next fair not fixed. Place of holding next fair, the society's grounds in Concord.

"The best feature of our last fair was the very fine exhibition of neat stock, particularly working oxen; next best feature was the display of fruit and vegetables; the poorest feature was the meagre show of household, manufacturing and fancy home-made articles. The show of horses and sheep was fair. Butter and cheese, much better than two or three years previous.

"The officers of the society for the present year are as follows: President, D. M. Clough of Canterbury; Secretary and Treasurer, J. E. Lang of Concord; Directors, B. F. Cofran of Northfield, William Parker of Allenstown, Aaron Whittemore of Pembroke, John Proctor of Andover, Josiah Carpenter of Pittsfield, Parker Brown of Bow, John C. Smith of Salisbury, Enoch G. Wood of Boscawen, Francis Robbins of Sutton, Mason W. Tappan of Bradford, S. C. Pattee of Warner, Charles H. Carpenter of Chichester, F. B. Sawyer of Webster, John C. Ray of Dunbarton, John P. Bean of Wilmot, D. P. Towle of Epsom, A. C. Burpee of New London, J. W. Simonds of Franklin, Leander W. Cogswell of Henniker, H. W. Greene of Hopkinton, M. J. Morrill of Hill, S. T. Burbank of Hooksett, H. E. Batchelder of Loudon, Eli Dodge of Newbury; J. C. Morrison, Ward 1, Concord; John S. Tallant, Ward 2; J. V. Aldrich, Ward 3; Richmond Smith, Ward 5; John Teel, Ward 6; Isaac Clement, Ward 7."

The Secretary of this board visited the fair and makes the following brief report:

The fair of this county, under the direction of the oldest agricultural society in the state, opened on Wednesday, October 5, and continued until Friday night. The exhibition was held on Merrimack Park, east of the river.

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Wednesday was a day of entries, and though cloudy and threatening rain, the amount of stock presented, and the contributions to the other departments were quite as liberal as was anticipated. Nothing was done on that day beyond arranging the contributions, except a trot in the afternoon. The attendance was limited.

The show of stock was superior, indicating great improvement in one of the most important interests of the farmer. There were over one hundred pairs of working oxen, large, in good condition, and, what is somewhat remarkable, all were of nearly the same color, that peculiar reddish brown which characterizes the Devon stock. There was not so large a number of milch cows as we ought to have seen. There were but few full-blood bulls of any breed on the park, though there were several superior grade animals present. There were some fine young animals in the cattle yards.

In the horse stalls there was some good stock — ten stallions, as many pairs of matched horses, about the same number of brood mares with foals at side, a good number of carriage or family horses, and a few colts. The horses were by no means prominent in the show.

The number of sheep was large, counting up to sixty or seventy animals, mainly South Downs, Merinos and crosses. Of swine, there were Chesters in liberal numbers, a pair of Essex, and a pair of Berkshires brought from Kentucky. The show of poultry was not large, nor did it contain any rare specimens. There was a fine show of fruits and of garden and field products, and an unusual amount of butter and cheese for a county fair, and some that was evidently of excellent character. The show of manufactured goods, merchandise, implements, pictures and fancy articles, was about the same as we find at most county exhibitions, and, though it included some entries worthy of mention, did not as a whole merit commmendation.

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COOS COUNTY.

[Reported by H. O. Kent, Esq., Treasurer of the Society.]

When the county was first organized as Coos, about fifty years ago, a fair was holden which was for several years a success, but it was neglected and soon abandoned. Nothing in the way of holding fairs has transpired in Coos since then up to 1870.

In 1869, a few of us determined to have a fair, and inviting our Essex county friends to join us, we organized one for the two counties. Of course a few persons did all the work, but it was done in so satisfactory a manner as to secure general acquiescence on the part of the active men of the two counties and a decided success for the first fair.

The same few men originating the fair purchased and enclosed twenty acres of plain land, a mile north of the village, fenced it, put up pens and stalls, a fine exhibition building, two stories high, eighty by forty feet, constructed a half mile track, as good as there is in New England, level as a floor, without an obstruction to the view from the judges' stand or seats, and offered the use of it to the new agricultural society on terms mutually satisfactory.

Our brethren of the press should see this ground. It is on the first terrace up from the Connecticut. To the south-east the entire White Mountain range is in sight; to the west the blue hills of Vermont; north are the twin Percy Peaks, while south lies the village of Lancaster and the vista of the Connecticut valley dotted with rich farms. The continuation of the Montreal railroad from Lancaster to the Grand Trunk at Northumberland will pass within fifteen rods of the park gates. The present terminus is less than one mile distant.

As the agricultural society had no money and as the fair ground company had all the necessary grounds and buildings, it was agreed that the company should pay all expenses, purses and premiums and take all receipts.

The fair was holden Tuesday, Wednesday and Thursday, October 4th, 5th and 6th, 1870, the last day being set apart for racing.

The fair was a very great success, the average attendance being between two thousand and three thousand, and this in spite of the weather, which was misty, raining and forbidding.

The show of stock on Tuesday was particularly large and fine, the town teams exciting especial attention. Unfortunately the stock was driven off Tuesday night, so that the show on Wednesday,

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when Hon. Moses Humphrey and N. R. Perkins, Esq., of the state board were present, was not so large as on the day preceding. The show of farm products was also good, the display of household manufactures and mechanical products, although good, not so large as it should have been or so large as it will be at another fair. Throughout, this fair was an experiment, every beholder being surprised at its success. The future fairs will, beyond doubt, display a greater list of products, stock, etc.

On Wednesday, Oct. 5, Gen. Natt Head delivered a very excellent practical address, which elicited great commendation.

The officers of the society for the past and present year are: President, Col. William D. Weeks, Lancaster; Vice-Presidents, Col. Hazen Bedel, Colebrook, Hon. John W. Hartshorn, Lunenburg, Vt.; Treasurer, Henry O. Kent, Lancaster; Secretaries, Charles E. Benton, Esq., Guildhall, Vt., Geo. H. Emerson, Esq., Lancaster. We have an executive committee of one or more from each town. This committee, composed of active men, manage the premium list and committees, while the executive officers and a board of directors manage the details of the fairs.

The second annual fair will be held at Lancaster next autumn.

I need not dwell on the natural resources of Coos and Essex counties. The greatest parts of cultivated portions lie in the valleys of the Connecticut and Androscoggin. They comprise some of the very best tillage and grazing land in New England. On our hills remote from these valleys are thrifty farmers and forests of lumber, while in the deep valleys a great wealth of pine yet remains. Our water powers, furnished by the rivers I have named and their tributaries, have capacity sufficient to drive the spindles of Manchester, Lawrence and Lowell combined.

Our farms should be and are prolific, our products good, our lumber trade is just developing, we have machine shops, foundries, carriage shops, a great number of starch mills and numerous other practical evidences of thrifty industry. Our stock is good and improving.

[Reported by Mr. Humphrey, Chairman of the Board.]

As a delegate from your board I visited the Coos County Agricultural Society Fair, which was held at Lancaster, October 4th and 5th, 1870. I was cordially received and entertained by the officers of the society and every opportunity was given me to ex-

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amine the stock and domestic manufactures which were on exhibition It was their first exhibition and it was very creditable to the society. The weather was not very favorable, but the attendance was good, and financially the fair was a success. On the second day Gen. Natt Head delivered the address, which was eminently practical and instructive, to a large audience. The society grounds are new, consisting of about twenty acres of land, very level, well laid out and well fenced, a good track fenced in, with a good stand and seats to accommodate the visitors. They have erected on the grounds a very fine two-story building, about forty by sixty feet, for an exhibition building; the lower story for farm implements, vegetables, fruits, etc., the upper story for domestic and fancy work, painting, drawings, etc. On the grounds were suitable pens for cattle and sheep, but there were no good arrangements for horses; they intend to have them for another fair, and their grounds will be, when they make what improvements they intend to make, one of the best in the state, if not the best.

As this section of the state is not so well understood by the people of the state as to its agricultural value for producing good crops and good stock, I was agreeably disappointed in finding so good a show of cattle, swine, sheep and horses, also products of the farm. I found some fine Jerseys and some nice grade Jerseys, Dutch cattle and Dutch grades, Short Horn grades, Cotswold sheep and grades, all looking well, and some of the nicest Chester county pigs that I ever saw, together with a good show of swine.

In the hall there were some of the best specimens of needle and worsted work that I ever saw on exhibition, also domestic work, such as hearth-rugs, woolen blankets, frocking and toweling, and other articles useful in families, which made a fair show. There was a fine lot of pot plants, wax flowers, crayon pictures, together with a case of millinery goods, all looking well.

In the cattle department there were three town teams from Lancaster, Guildhall and Northumberland, all good cattle. There was one pair of fat oxen, one three-year old bull, grade; one two-year old, three two-year olds, Dutch grade; three bull calves, grades; forty-three milk cows, some of them Jerseys, some grade Jerseys and other grades, all looking like good cows for milk. I found quite a large entry of horses, three stallions six years old and upwards, one three-year old, and six pairs of matched horses, seven brood mares and colts by their side, four three-year olds,

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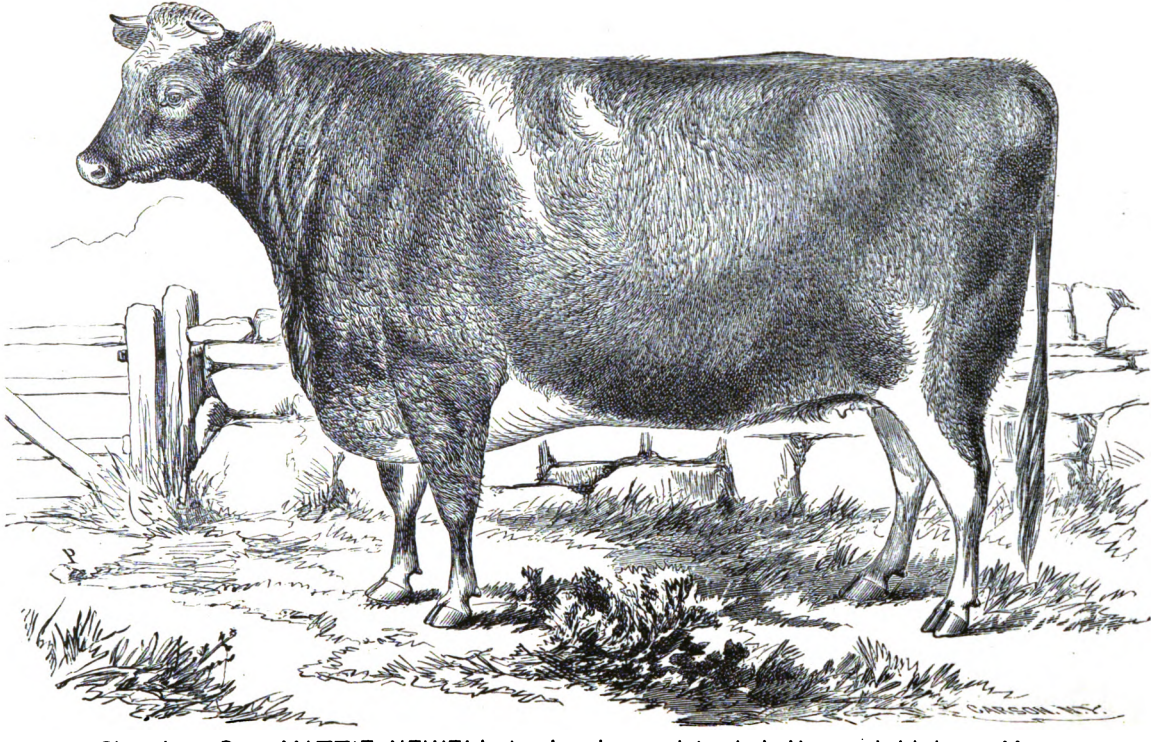

Short-horn Cow, MATTIE NEWELL, bred and owned by J. A. Harwood, Littleton, Mass.

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seven two-year olds, four yearlings, eight geldings and mares, and two saddle horses. Sheep, there was not much of a variety, mostly Cotswold and grades; I found seven Cotswold bucks and grades; the Cotswolds were fine specimens of that breed; also sixteen ewe lambs and twenty sheep. Swine were good, three boars, two breeding sows and twelve Chester county pigs, a very fine lot. In the poultry department I found ten turkeys, nine Leghorn hens, six creepers and a coop of Brahmas.

In the dairy department there were nine tubs of butter, six cheeses, all very superior, a lot of maple sugar, one box of honey, two lots of bread, two of pastry. I found a fair show of agricultural implements, consisting of one ox-cart, horse-rakes, mowers and plows, sleds, etc. In vegetables and fruit were six entries of apples, two lots of Rogers's grapes, thirteen traces of corn, three pecks of beans, peck of surprise oats, half-bushel seed onions, two lots of Brooks's potato seedlings, very large, eleven lots of early rose potatoes, twenty pumpkins.

The department of manufactured articles was well sustained by fine specimens of marble work, also cabinet work of different varieties, upholstery, tin work, harnesses, boots, buggy carriages, gigs, butter tubs, baskets, hard soap, etc.

The household manufactures on exhibition were ten yards frocking, one bundle linen toweling, fifteen yards of wool blanketing, eight hearth rugs, stocking yarn, three quilts, six tidies, fourteen pieces of worsted work, one embroidered skirt, together with a case of millinery goods, five crayon pictures, lot of wax flowers, two lots of pot plants, etc., making in all a good exhibition.

With the energy of its officers there can be no doubt that the society, as it is, in the beautiful town of Lancaster, will reach that prosperity that the friends and officers desire, and will stimulate the agricultural interest in that section of the state; and it is with much satisfaction that I have to record my thanks for many attentions paid to me as a delegate from your board by the officers of the society and the citizens, which made my visit pleasant with them.

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GRAFTON SOCIETY.

[Reported by S. D. Baker, Esq., Secretary of Society.]

In reply to yours asking for information relative to the Grafton County Agricultural Society, I have to say that the earliest records in my possession are of the sixth annual fair of the Connecticut River Valley Agricultural Society held in Lebanon, September 21st and 22d, 1853. This would make the date of the formation of the society about the year 1847, or twenty-three years ago. Our fair of last fall was the twenty-first of the society. In 1857 the name was changed to Grafton County Agricultural Society, and it has continued to hold its fairs annually in various locations with uniform success until the present time. The first officers of whom I have any record were A. B. Closson, of Hanover, President, and Joel Baker, Secretary. It has since numbered amongst its officers many of the most eminent agriculturists of our county. It would not be invidious to name the late Hon. David Culver, whose liberal bequest to the State Agricultural College has given him a reputation larger than the bounds of county or state.

Our receipts at the fair of 1870 were $1600, which amount paid our premiums in full, our expenses (which were considerably increased over former years by the excessive drought), a portion of the indebtedness of the previous year, and left a small balance in our treasury.

The premiums paid by the society are about three times as large as those paid by the first fairs of the Connecticut Valley Agricultural Society, and are, or should be, a sufficient incentive to exhibitors to put forth their best efforts. It is to be regretted that so many of our best farmers go to our fairs as they would to a circus or menagerie, expecting to find the exhibition complete in every respect as per advertisement. They seem to forget that upon the efforts of such as they, the success of the enterprise mainly depends. Without the co-operation of the farmers the endeavors of the officers of the society will prove futile and disappointments will naturally result.

My connection with the society is of a very recent date, and I am consequently unable to give you much information relative to its past history. I think I can, however, safely predict for it a brilliant future of usefulness. Its president and executive committee are men who will not rust out, and the impetus that has

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been given to agricultural interests by the efforts of the state board, and the agricultural departments of our weekly papers, as well as the formation of town clubs, encourage us in the belief that the suceeeding fairs will be eminently successful.

PRESENT OFFICERS.

President, J. F. Keyes, Ashland; Executive Committee, D. M. Tenney, Groton; S. P. Ford, Lisbon; A. W. Putnam, Haverhill; Treasurer, C. M. Whittier, Plymouth; Secretary, S. D. Baker, Rumney.

[Report of Dr. Mason, Member of the Board.]

I attended by appointment the fair of Grafton County held at Plymouth on the 27th, 28th and 29th of September.

The needle-work, fancy-articles and household goods were excellent and probably not excelled by any other county of the state. It did great credit to the ingenuity and industry of the females of that county. Vegetables and fruits were well shown and of superior quality. The most important and useful part of the show was a failure. I mean the cattle show; either the county is behind in handsome stock or they did not bring them out. The fault of turning our fairs into horse-trots was very marked here. More attention should be given to bring out more and better stock. If we expect to keep up the interest and benefit of our fairs there must be less horse-trotting and more agricultural exhibitions, or the whole thing will resolve itself into a pure show for fast horses, which has no connection with the real farming interest.

A noticeable failure at the Strafford fair was a lack of speaking and evening discussions, while at the Grafton Fair the managers secured the best of speakers, and this was the most interesting and useful part of the exhibition. Addresses were made by Hon. Jacob H. Ela, in a plain, common-sense style, full of practical suggestions and advice to the farmers of our state. Ex-Mayor Stevens, of Concord, made a few sensible remarks, and the wide-known Peter Sanborn convulsed the audience by his inimitable style of address, producing at once good feelings and radiant countenances through the whole audience. Then came the main address by Senator Patterson, so full of interest that it held the mass quiet for an

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hour. It should be read by every farmer in New Hampshire. It is very desirable that this part of our annual agricultural exhibitions shall be attended to, and suitable speakers secured, having a certain part of the time set apart for speaking.

MASCOMA SOCIETY.

[Reported by C. O. Barney, Esq., Secretary of the Society.]

The Mascoma Valley Agricultural Society was organized at Lebanon on the 21st of March, 1870. At that time officers were chosen *pro tem.*, and the meeting adjourned to East Canaan to meet on the 13th of April for permanent organization. Among those most active in the organization of the society were Charles Kent and E. K. Porter of Lyme, E. B. Hurlburt of Hanover, C. O. Barney and Charles Day of Canaan.

$1,200 is intended to be spent yearly in premiums and expenses. In 1870, the first fair, the premiums were light. On horses for premiums and purses there was offered about $400; neat cattle, about $300; sheep, $75; household and mechanical manufactures, $100; and miscellaneous, $50 to $75.

The time proposed for the next fair is the 13th, 14th and 15th of September, at Canaan; if it conflicts with the state fair it will be a week later.

The best feature of the last fair was horses, and the poorest show was sheep. The prevailing opinion is that too many premiums are offered for horses, and too few for neat stock and farm improvements.

The present officers are: President, Peter Kimball of Grafton, Vice-Presidents, Charles Day of Canaan, Aaron Gould of Piermont, Parker Wright of Orford, John S. Bridgman of Hanover, W. True of Plainfield, Col. J. S. Knowlton of Danbury, J. F. Perley of Enfield; Treasurer, Charles Kent of Lyme; Secretary, C. O. Barney of Canaan.

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GILMANTON, ALTON AND BARNSTEAD SOCIETY.

[Reported by Thomas Cogswell, Member of the Board and Secretary of the Society.]

Our fair was started late last August. It was got up on the impulse of the moment, and no arrangements or organization had been made prior to that time. A few persons met and agreed to hold a two days' town fair, on the 5th and 6th of October, on the Gilmanton Iron Works Trotting Park. We afterwards increased our society by taking in Alton and Barnstead.

We advertised premiums to the amount of $175, and run our chances to receive money enough to pay them with. Some of our leading farmers were doubtful in the matter, and were fearful it would be a failure. Our track was not fenced, and we had no buildings for exhibitors to place their articles. It was, in fact, a hard start.

Our fair was a most perfect success. Everything went off well, and we received about $350 during the two days, enough to pay in full all our premiums and have quite a balance left in the treasury. Our premiums for horses, including the amount paid for trotting, was some over one hundred dollars. We shall, another year, offer smaller premiums for horses and larger for cattle and sheep. I am not able at this time to give the exact amount paid for each department, but our premiums were necessarily small.

An address was given on the second day of the fair by Dr. Jeremiah Blake, of Gilmanton, on the "History of Agriculture." It was a fine production, and worthy to be filed among the agricultural papers delivered on like occasions.

James W. Cogswell is President of the Society; Thomas Cogswell, Secretary and Treasurer; R. M. Gray, Superintendent, with a board of directors.

The best features of our fair were the working oxen and stock horses. Alton came in with a large town team — as fine cattle as can be found in the state. The poorest show was of sheep.

We shall have a fair sometime in September next, but will arrange the time, so as not to interfere at all with any other society.

We have the material in this vicinity of making one of the best shows of farm stock that can be made in the state. We need a county society, and I think our little society will be used as the

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foundation of a county fair, next fall. Our farmers are not sufficiently awake to the importance of the matter, but are getting more interested in the agricultural papers and farmers' clubs, which is a good sign. I hope to be able another year to report a larger and better fair, but, everything considered, perhaps we can not have a more successful one.

THE OLD BELKNAP SOCIETY.

[Reported by O. A. J. Vaughn.]

The Belknap County Agricultural Society was formed in the summer of 1858, with Thomas Durrell o Gilmanton, President; O. A. J.. Vaughn of Laconia; Secretary; John T. Coffin, Treasurer. A fair was held in September of that year, on the same ground where the state fair was held in 1852. This first attempt at a county exhibition was conclusive as to the ability of the people of Belknap to sustain a county society. Fairs were had at the same place and under the same organizations in 1859 and in 1860, but in 1861, in consequence of the war, it was thought not best to have one, and none has been had since; all of these fairs were, in all respects, successful. In 1859 and in 1860, the show of oxen excelled that ever made in any county or at any state fair in this state. In the last year named, 1860, there were on the grounds three hundred pair of oxen from the towns of Meredith, Sanbornton and Gilford, any one pair of which was a model for working oxen. The show of all other stock was good.

The society was not incorporated, but was voluntary, and its organization might well enough be styled a nominal one. No officer ever received any pay for any service rendered in the management of it.

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TOWN FAIRS.

There have been several town fairs in the state, reports of which have reached us, but having occupied so much space in discussing the state and county societies and fairs, we can only name those enterprising town associations with the hope that another year we may add many a town to the list, now consisting of Bath, Lebanon, Acworth, Chester, Strafford, and others not now reported.

BENEFIT OF FAIRS.

After attending many fairs in the autumn of 1870, the Secretary reviewed those in our own state and was led to comment on their benefits to the people, in a paper, as follows:

The agricultural fairs for 1870 have terminated. There has been a long series of these exhibitions throughout the country. In such states as Ohio and Illinois, from forty to sixty have been advertised. Indiana and nearly all the western states have held an unusual number. More than forty were announced in the state of Mississippi. In other southern states they were numerous, while in the middle and eastern sections these gatherings have been by no means less common than in former years.

In our own state there have been more fairs, which included a large portion of a county, than there are counties, to say nothing of the frequent town shows, which, of late, are becoming occasions of interest.

Without the record before us, let us estimate the number of people visiting the exhibitions at 100,000, which cannot be regarded as an extravagant estimate; the number of neat stock presented, we put down at 5,000 head: the horses at 1,500; the sheep, probably, did not come up to 500, nor the swine exceed 100; the poultry, perhaps, 500, birds of all kinds.

Of fruit, vegetables, grains, mechanical work, mill fabrics, household manufactures, art works and fancies, an indefinite and valuable amount.

The sum total of premiums paid will not greatly exceed $12,500, while the cost of preparation and the amount required for running expenses must be equal to the premiums, making the

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aggregate sum of $25,000 for the fairs held in our own state this year.

This may seem a large amount for a small state, and the question will naturally arise whether the expenditure is warranted by the results. We are convinced that it is warranted, for these reasons:

First, it is all paid voluntarily, not one dollar furnished by the state, none by any town organization, neither is anything given by legal or social compulsion, and usually what is thus contributed brings a compensation to the giver, at least, and usually to the public.

In the next place, the expenditure is warranted by the social results which follow these exhibitions. Men, and women, too, must have some rest; they must enjoy, now and then, a holiday, and we have now no state or local festival, no entertainment, no one occasion, or series of meetings, affording so much instructive entertainment and general benefit as our agricultural fairs. In these gatherings there is no distinction of classes, all meet on the same level, and have presented them the same elements for enjoyment at the same price. They are purely democratic institutions.

A third consideration is the advantage of comparison and the consequent stimulus to excel. This will induce more careful breeding, more thorough culture, greater exactness in mechanical work, and greater taste in all the departments of farm work, house management, or mechanical economy. A benefit is thus derived which is durable, extending beyond the limits of the association which makes the exhibition, and beyond the generation for whose advantage it is maintained.

These, in general, are some of the advantages of these annual exhibitions. Even those men who decry agricultural fairs are benefited by them, for they cannot avoid hearing and reading of them, though they may refuse to attend them.

It is then our duty to encourage the fairs, attend them, contribute to their success whatever we have that will incite to improvement, and induce men to make the most of the means entrusted to them.

We cannot close this part of our report without a suggestion to officers of societies which has not unfrequently been made before, regarding the management of fairs. Adopting the words of the Secretary of the Board, we unanimously endorse the following recommendation:

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From an experience of many years' attendance on agricultural fairs, we are strongly impressed with the fact, we are fully satisfied, that great injustice is sometimes done to exhibitors, and of course to the public, by the decisions which are made by the judges. Sometimes men are *log-rolled* to positions on the boards of judges; sometimes men entirely ignorant of the nature of the article of which they are to judge are selected, but quite as often they are in too much haste to give proper attention to the matters assigned them. In all these cases the decision is as likely to be wrong as it is to be right, and the award to be given to an exhibitor who is as much disappointed as one could be, and whose honest opinion is in favor of his competitor. There are other influences that sometimes are brought to bear on committees to induce a decision that would otherwise be very different.

We have known a mongrel animal to take the award that belonged to a thoroughbred; an inferior fabric to be placed above its undoubted superior; and a monstrous growth of farm or orchard production to be ranked above a more saleable and far more valuable article exhibited by its side; and so through the whole catalogue of the entries do we find awards that do great injustice to the careful breeder, gardener, dairyman or manufacturer. This is no rare occurrence. It is common, and hundreds of public-spirited men see it, and for this very reason stand aloof from fairs and refuse to give countenance to such injustice even by the presentation of articles for the judgment of such committees.

We need not prolong our comments on the practice so well-known, and so thoroughly condemned by honest people. The remedy should be sought and applied if possible. What it is we have not the ability to determine. Something like this will tend to correct the evil.

Let men of judgment be selected as jurors; such as have no grounds for prejudice, and no motive to disregard merit,—let them receive a fair compensation for their services,—let them have ample time to take into consideration all the articles, or animals in a given class, and make up their judgment, which shall be presented to the executive board, or a sub-committee of the board for approval; and in case the rules of the society have been regarded, and no error is apparent, their decision shall be announced and recorded.

This practice has been adopted to some extent in regard to horses, and has generally been regarded with great favor. The

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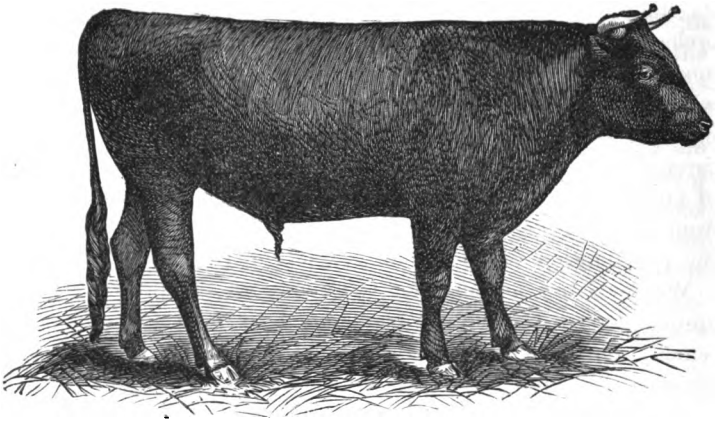
same method would be equally applicable to other departments of stock, to fruit, garden products, manufactures, etc. It would cost more than the present system, and it would be worth more; it would be of some value; but too often the present practice is so much abused as to make it not only worthless, but actually productive of evil. We trust agricultural societies, whether state, county or local, will take the matter into consideration and adopt some plan which will remove this great objection to presenting stock or products for awards.



DEVON BULL "FORRESTER."

Owned by Ward Parker, Merrimack; from E. H. Hyde's herd, Stafford, Ct.; winner of first prize for two-year-olds, at New England Fair, Manchester, 1870; and of three other prizes, at other fairs.

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THE NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS.

Although we have no voice in the management of the College of Agriculture, we have an interest in its prosperity and usefulness as a state institution, and have maintained friendly relations with the Faculty and the Trustees. We regard it as a part of our duty to give it a proper consideration. With that view, and in compliance with a cordial invitation from President Smith, on the 6th day of February last, a delegation of this board, accompanied by D. M. Clough, P. M. Rossiter, Joseph B. Walker, and other gentlemen of the farmers' convention held at Lebanon that day, made a visit to the college at Hanover, for the purpose of conferring with its managers and of making a personal examination of its past progress and present condition. We were very courteously received, and conducted through its various buildings and over its farm. The fullest information relative to the past and future operations of the institution was cheerfully placed at our disposal.

From the examination then made, as well as from information gained at other times and elsewhere, the board are of the opinion that the great problem of an agricultural college is being gradually solved here as satisfactorily as in any other state of the Union. We speak of the enterprise as a *problem*, from the fact that, when in July, 1862, the Congress of the United States passed an act to establish colleges of agriculture and the mechanic arts in the several states, and made an endowment to each of a liberal grant of public land, for its support, such institutions were almost entirely unknown in this country. In England and upon the continent of Europe they had to be sure been in successful operation for some years and had been productive of much good, but their establishment here had been attempted in but a few instances and with but a partial success.

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The passage of this act, pretty general in its terms, precipitated at once upon the consideration of the people of each state, the questions, whether they would have such an institution within their borders, and if so, upon what plan it should be established. These were discussed throughout this state, and the desirableness of the institution contemplated was at once admitted by all. The consideration of the precise plan upon which it should be instituted and maintained gave rise to views somewhat discordant, all of which were maintained by honest, earnest and able advocates. For nearly four years the discussion continued with no definite result. It had, however, been narrowed to two definite and distinct propositions — one for an independent college, and the other for a college connected with some existing institution, upon which it might in its infancy lean for support and from which it might derive important aid.

It was objected to the former that the income of the endowment would be inadequate to its support unless greatly enlarged by the state, which manifested no disposition in that direction. Against the latter it was urged that the union contemplated was dangerous and that the larger institution would overshadow the smaller and be fatal to its prosperity as a school of agriculture.

When our legislature assembled in June, 1866, a month only remained of the time limited by Congress for the acceptance of the provisions of the act above referred to, passed by them nearly four years before. It was universally apparent that decisive action must at once be taken or the offer therein made to New Hampshire would expire by limitation. The subject was presented early in the session, and after mature consideration a bill was introduced, embracing, as far as possible, the leading features of the two plans previously discussed. It provided for the establishment at Hanover of an independent College of Agriculture and the Mechanic Arts to be placed under the direction of a board of nine trustees, five of whom should be appointed by the Governor, with the advice of the Council, and four by the trustees of Dartmouth College, and afterwards maintained under such arrangements with the latter as might be agreed upon by the respective trustees of the two institutions. Such a contract was executed by the parties thereto on the seventh day of April, 1868, and may be terminated by either party after one year's notice to be given in July, 1874, or at any time after fourteen years from July 7, 1866.

Our Agricultural College is therefore an independent institu-

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tion, governed by its own board of trustees, and located at Hanover, under such a business connection with Dartmouth College as has thus far proved satisfactory to both parties. We are not aware that under existing circumstances the General Court of 1866 could have taken a wiser course than it did in the legislation it then adopted. The college, as it exists to-day, is the result of it.

It is but just that we should bear our testimony to the liberal and enlightened spirit in which the trustees of Dartmouth have met the overtures of the friends of this new institution, and also to the good faith in which they have performed their covenant in the compact mutually agreed upon. They have manifested from the beginning a deep and earnest interest in the proposition to improve the intellectual training of the agricultural youth of this state, an interest which has been as creditable to them as it has been encouraging to those having the difficult enterprise in charge. But for this active aid and sympathy it could not have reached the high point it has already attained. It became apparent, very soon after the opening of the college for the reception of students, that a building of its own was imperatively necessary for its full success. The apartments offered for use by the older college had been designed for its own students and were separated more or less from one another and from the laboratory. The latter too was soon found insufficient in size and appointments for the modern methods of chemical instruction.

It also became apparent very soon that the only remedy for this inconvenience was the erection of a new building properly constructed to meet these new wants of a new institution. The terms of the congressional act however provided that no portion of the endowment made by the general government should be expended in the erection of any buildings. As this constituted the only fund at the command of the trustees, the question as to how the requisite means for the erection of such a structure should be procured was a difficult one to answer.

About this time, fortunately, Dartmouth College received from the estate of the late David Culver, a legacy of fifteen thousand dollars, by him devoted to the promotion of agricultural science in that college. This the trustees at once offered to contribute towards the erection of the building contemplated. Seeing also the inadequacy of this amount, they very generously proposed to enlarge it by a gift of ten thousand dollars in money from their

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own funds, together with a fine lot of land suitable for its site, provided the state of New Hampshire would increase the fund to forty thousand dollars, the sum required, by a grant on their part of fifteen thousand dollars, to be refunded in case the college was ever removed from Hanover. This generous offer, the legislature of 1869 very wisely, as we think, accepted.

Since then, from the means thus provided, upon a convenient site a few rods eastward from the old college buildings, has been erected a comely and beautiful structure of four stories, which for thoroughness of construction and adaptation to the purposes for which it was designed, has no superior in the State. It is now nearly finished and will be ready for occupancy at the beginning of the next term.

Perhaps no better idea of the present condition of this college can be given than by a brief allusion to the several points to which our attention was particularly directed at the time of our visit, viz :

First, The Agricultural College Fund.
Second, The contract with Dartmouth College above referred to.
Third, The new building.
Fourth, The Farm.
Fifth, The Faculty of Instruction.
Sixth, The Course of Study.

THE FUND.

The fund of the college now amounts to eighty thousand dollars, and was derived from the sale of one hundred and fifty thousand acres of public land granted by the general government to this state for the establishment of such a college. It is securely invested in New Hampshire six per cent. bonds. No safer investment could be made of this fund, and we would simply suggest that some provision be made for their registration in the office of the state treasurer, so that in case of loss in any way the college should suffer no detriment or inconvenience.

THE CONTRACT.

The contract defining the relations existing between the two institutions was executed on the seventh day of April, A. D., 1868, and is in the following language, to wit:

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This agreement, made and concluded this seventh day of April, 1868, by and between the New Hampshire College of Agriculture and the Mechanic Arts, by their Trustees, of the first part, and Dartmouth College, by their Trustees, of the second part,

WITNESSETH,—

That the party of the first part, under the authority of an Act of the Legislature of New Hampshire, approved July 7, 1866, entitled "An Act to Incorporate the New Hampshire College of Agriculture and Mechanic Arts," and with a view to promote the usefulness of said institution, and in consideration of the agreements and covenants of the party of the second part, hereinafter contained, do hereby covenant and agree to locate, and do locate and establish, the said institution at Hanover in this State, in connection with Dartmouth College; this location and agreement between the parties being subject to be terminated, upon a notice of one year given by either party, at any time after fourteen years from July 7, 1866, as provided in said Act, or on a notice of one year given in the month of July, 1874, by either party.

And, in consideration of the above, the party of the second part agree with the party of the first part that they will cordially co-operate with them in promoting the purposes for which the New Hampshire College of Agriculture and the Mechanic Arts was established; and they covenant and agree that, so long as said Institution shall be located at Hanover in connection with Dartmouth College, they will furnish, so far as shall be desired by the party of the first part, recitation and lecture rooms for the use of the said New Hampshire College of Agriculture and the Mechanic Arts, and will allow the students thereof the same privileges as to the libraries, laboratories, apparatus, and museums of Dartmouth College as are now granted to the members of the Chandler Scientific Department. For all which the party of the first part shall pay to the party of the second part such sum as may from time to time be agreed on; and if, in this regard, any difference of opinion shall arise between the party of the first part and the party of the second part, the matter shall be referred to the Governor of New Hampshire, whose decision shall be final.

And it is further agreed between the party of the first part and the party of the second part that, so far as the services of the members of the Faculty of Dartmouth College shall be needed, and can properly be rendered, in carrying out the programme of instruction in the New Hampshire College of Agriculture and the Mechanic Arts, they shall be at liberty to render such service; and they shall receive from the party of the first part the same compensation that is now given them for a like amount of instruction in the Chandler Scientific Department; and it is also agreed that, if services of any Professor in the New Hampshire College of Agriculture and the Mechanic Arts shall be desired in Dartmouth College, it may be rendered on the same terms, provided the Trustees of the New Hampshire College of Agriculture and the Mechanic Arts shall deem it compatible with the interests of said institution.

And it is further agreed by and between the parties to this indenture that, for the purpose of insuring not only wise appointments, but a harmonious co-operation between all the teachers and faculties of the several associated institutions located at Hanover, a unanimous vote of the Trustees of the New Hampshire College of Agriculture and the Mechanic Arts, present and

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voting at any regular meeting, shall be required for the election of a Professor in said College, seven members being a quorum for this particular purpose.

And it is further agreed by and between the parties to this indenture that, so far as deportment is concerned, the laws of Dartmouth College shall be binding upon the students in the New Hampshire College of Agriculture and the Mechanic Arts.

And it is further agreed by the party of the second part that, should any property of whatever sort fall to the Trustees of Dartmouth College by the will of the late David Culver, devoted by the said will to the purposes of agricultural instruction in connection with Dartmouth College, the Trustees of the said College will use the said property in accordance with the provisions of the will, with all due respect to the wants of the students of the New Hampshire College of Agriculture and the Mechanic Arts, and to any other object contemplated by the said College.

And the party of the second part do particularly agree that, should there be, in the property coming to them by the will of David Culver aforesaid, a farm in Lyme, in the State of New Hampshire, given by the said David Culver for the purpose of an experimental farm, they will, if requested in writing by the party of the first part, furnish to them such reasonable portion of said Culver farm, and the buildings thereon, as may be needed for an experimental farm, to be managed under the general direction of the party of the first part. And, in case said Culver farm does not come into the possession of the party of the second part, they agree that they will hereafter co-operate with the party of the first part, in any reasonable way, in procuring the use of an experimental farm, if desired by the party of the first part.

And it is finally agreed by and between the parties to this instrument that the terms of connection between the New Hampshire College of Agriculture and the Mechanic Arts and Dartmouth College, may at any time be changed by consent of both the parties aforesaid.

Agreed to and executed by the parties aforesaid, the day and year aforesaid.

ASA D. SMITH,
Z. S. BARSTOW,
NATH'L BOUTON.
GEO. W. NESMITH,
ANTHONY COLBY.
P. B. DAY,
EDWARD SPALDING,
Trustees of Dartmouth College.

ASA D. SMITH,
FREDERICK SMYTH,
J. D. LYMAN,
JOHN. B. CLARKE,
C. C. HUTCHINS,
EDWARD SPALDING,
ANTHONY COLBY,
Trustees of the New Hampshire College of Agriculture and the Mechanic Arts.

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We allude to this no further than to express our belief that its provisions are more advantageous to the Agricultural College than could have been offered by any other institution of learning in the state; indeed no other was in a situation to offer advantages so extensive.

THE NEW BUILDING.

This building is most admirably adapted to the purposes for which it was intended. Its general plan was devised by Professor Dimond, aided by valuable suggestions of President Smith, and subsequently perfected in its details by Edward Dow, architect. A careful examination of it gives abounding evidence of the familiarity of the two gentlemen first mentioned with the practical wants of such an institution, and with the best appliances for making them most successful.

It is a plain, imposing structure of four stories, having a length of one hundred and a breadth of sixty feet. The lower story is constructed of stone obtained in the neighborhood, some of it upon the very site upon which the building stands. A portion of this story and perhaps the whole of it is to be occupied by a museum of agricultural implements.

The two next stories are of brick and afford halls for lectures, recitation rooms, a library, a weighing room, professors' rooms, and a large, well-planned laboratory, to be furnished with all the best modern appliances for the practical study of chemistry. We cannot speak too highly of this last apartment, as a convenient, well-furnished laboratory is the only place in which a thorough knowledge of chemistry, the great leading science which lies at the bottom of our agriculture, can be obtained.

The lofty Mansard-roof that covers the building secures to the fourth story nearly if not quite the same superficial area possessed by the story below it. This is finished as one large hall and is to contain, besides the mineralogical and geological specimens collected by the state geologist, other valuable cabinets illustrative of the sciences taught in the college, to which free access will at all times be had by the students of the institution.

We were particularly pleased with the thorough manner in which the work of this building has been done. More splendid edifices than this may doubtless be found in some sections of the state, but none more substantial. It was also a matter of much

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gratification that ample provision had been made for the thorough ventilation of all its apartments—a matter of very grave importance where they are to be occupied many hours of each day by large numbers of students attendant upon recitations, lectures and laboratory practice. When completed this building will be an honor to New Hampshire and stand we hope for centuries, a noble gift of the public and private philanthropy of this age to the great cause of agricultural education. Not a little pleased were we by the assurance that its cost would not exceed the appropriation made for it and would require no supplementary grant of funds.

THE COLLEGE FARM.

We are informed that it has ever been the aim of its managers to make the education offered by this institution eminently practical as well as scientific, and so far as possible to illustrate upon the land, at the barn and the stable as well as in the lecture-room and laboratory, the principles of the several sciences pursued by its students. For this purpose a farm is indispensable and would have been early purchased but for the want of requisite means. Without it the college could never attain the great end of its institution or realize fully the expectations of its friends.

It so happened that in the fall of 1869 the very farm which on account of its character and location was the one of all others most desirable for this purpose was thrown upon the market. Professor Dimond, with that keen foresight of the future wants of the college which has ever characterized him, at once purchased it and offered it to the trustees at its cost. As they had at the time no funds which they felt justified in devoting to its purchase, he continued to hold it.

In June of last year, Hon. John Conant of Jaffrey, one of the most successful farmers of Cheshire county, who had for years been revolving the subject of agricultural education in his mind, visited Hanover for the purpose of thoroughly acquainting himself with the efforts there being made in this direction. Having examined with great care all things pertaining to the college and also this farm to which allusion had been made, he proposed to purchase it of Prof. Dimond at its cost and interest and convey it as a gift to the institution—an act on his part, not of enthusiastic impulse, but rather one prompted by a calm conviction that an experimental farm was absolutely essential to success. The pur-

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chase was accordingly made and the farm is now the property of the college. We know not which to admire most, the clear mental grasp of the whole subject of the agricultural college by Mr. Conant, or his noble generosity in so promptly devoting seven thousand dollars of his money, honestly earned in farming, to a purpose so useful and so vitally important and that too at the very time it was needed most. There are times when a dollar is worth more than a dollar to an individual or to an institution, times when sympathy mingled with judicious pecuniary aid is sure to bring success and encouragement both, and success too out of all proportion to the amount howsoever generous that may be. It was at such a time that this noble-hearted Nestor of New Hampshire farmers put his shoulder to the wheel and manifested his heartfelt interest in the cause of agricultural education. The man who had made one hundred thousand dollars on a Jaffrey farm was not the man to be frightened at the sharp gradients up which this young college was struggling to make its way or to refuse it aid when convinced it wanted it the most. Honored be the name of JOHN CONANT!

This farm consists of one hundred and thirty-five acres of good land, most of it being surpassed by none in the state. It has a loamy, friable, slightly clayey soil, free from stones, easily worked and capable of producing in perfection any crop suited to its latitude. Fifty-five acres are in tillage and constitute a single field next the buildings. Adjoining this lie others in pasture and wood, separated from the first by a wall. The field first mentioned is in a fair state of cultivation and bore last season, in addition to other crops, sixty tons of excellent hay. It may be easily made to yield double this quantity and doubtless ere long will be brought up to a high state of cultivation.

The farm buildings consist of a comfortable one story house, barns, various connecting sheds and out-houses. They are in pretty good repair and will answer a good purpose for several years to come. Eventually they should be supplanted by structures more convenient and better adapted to the requirements of a farm of this character. They are at present occupied by Prof. Dimond.

Besides the land above mentioned there is another tract of excellent quality of about twenty-three acres, formerly adjoining it but now separated from it by a street. This was purchased for the college by the trustees previous to the purchase made by Mr.

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Conant. Enlarged by this, the whole farm has an area of one hundred and fifty-nine acres. Land for experimental and illustrative purposes could not be more conveniently located than is this.

FACULTY OF INSTRUCTION.

As before remarked the Agricultural College has a faculty of instruction distinct from those of the other departments of the University. It consists of the following gentlemen, viz: Rev. Asa Dodge Smith, D. D., LL. D., President; Ezekiel Webster Dimond, A. M., Professor of General and Agricultural Chemistry; Thomas Russell Crosby, M. D., Professor of Animal and Vegetable Physiology; Rev. Daniel James Noyes, D. D., Instructor in Intellectual and Moral Philosophy; Edwin David Sanborn, LL. D., Instructor in Rhetoric; Elihu Thayer Quimby, A. M., Instructor in Civil Engineering; Charles Augustus Young, PH. D., Instructor in Natural Philosophy and Astronomy; Charles Henry Hitchcock, PH. D., Instructor in Mineralogy and Geology; Charles Franklin Emerson, A. B., Instructor in Mathematics; Dwinel French Thompson, B. S., Instructor in Drawing.

It would be superfluous for us here to remark that a more devoted or abler body of instructors cannot be found in any similar institution in the land.

THE COURSE OF STUDY.

The following is the course of study prepared by the Faculty and approved by the Trustees:

Junior Year — Introductory to both Courses.

First Term—Mathematics, Algebra, Loomis's; Botany, Structure and Physiology of Plants, Gray; Physics; Physical Geography; Drawing, Chapman's Free Hand; Book-keeping, Crittenden's (Counting-house Edition.)

Second Term—Mathematics, Algebra completed; Loomis's Geometry; Botany, Characteristics of plants and their Classification; Drawing, Chapman's Free Hand; Chemistry, Chemical Physics; Metallic and Non-Metallic Elements, and their compounds; Lectures; English Composition and Declamation throughout the year.

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Middle Year — Course in Agriculture.

First Term — Mathematics, Loomis's Trigonometry, Surveying and Levelling, with use of instruments and practice in the field; Drawing of Plans and Maps; Lectures on Civil Engineering; Practical Botany, useful and noxious plants; Propagation of plants, fruits, &c.; Organic Chemistry, Gums, Sugar, Alcohol, Essential Oils, Organic Acids and Bases, Fermentation, Putrefaction, &c.; Lectures.

Second Term — Mathematics, Geometry completed; Mensuration and Navigation; Spherical Trigonometry, Analytical Chemistry, Atfield's and Bowman's; Physics, Loomis's Natural Philosophy; Zoology, Human and Comparative Anatomy.

Course in Mechanic Arts.

First Term — Mathematics, Loomis's Trigonometry, Surveying and Levelling, with use of instruments and practice in the field; Drawing of Plans and Maps; Lectures on Civil Engineering; Descriptive Geometry, Church's Organic Chemistry, Gums, Alcohol, Essential Oils, Organic Bases; Fermentation, Putrefaction, &c.; Lectures.

Second Term — Mathematics, Geometry completed; Mensuration and Navigation; Spherical Trigonometry, Analytical Chemistry, Atfield's and Bowman's; Mechanical Drawing; Lectures on Machinery; the design, construction and use of Prime Motors; Physics, Loomis's Natural Philosophy; Zoology, Human and Comparative Anatomy.

Senior Year — Course in Agriculture.

First Term — Agricultural Chemistry, Soils, Manures, (natural and artificial), and various farm crops; Zoology, General Principles, Classification and special relations to Agriculture; Physics, Astronomy and Meteorology, (Loomis's and Brocklesby's;) Lectures; Political Economy.

Second Term — Agricultural Chemistry, use of the various crops in the feeding of stock and production of milk, butter, cheese, fruit, &c.; Zoology, Human and Comparative, Physiology and Veterinary Medicine and Surgery, Rural Economy; Lectures; Intellectual and Moral Philosophy, Haven; English Composition and Declamation through the year; Lectures through the year on Rural Architecture, Landscape Gardening and Esthetics of the farm.

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Course in Mechanic Arts.

First Term — Chemistry, the Analysis of rocks, ores, minerals and organic bodies; Mechanics, the Principles of Mechanism applied to the strength of materials, the working of stone, the location and construction of roads, and the building of bridges, including Graphical Problems; Physics, Astronomy and Meteorology (Loomis's and Brocklesby's;) Political Economy.

Second Term — Technical Chemistry, the construction and management of iron works, glass works, bleaching works, salt works, dyeing and calico printing; Technical Mechanics; Lectures on mill work and other topics relating to manufacturing industry, also on applied electricity; Intellectual and Moral Philosophy, Haven; English Composition and Declamation through the year; Lectures upon the Agricultural and Mineral resources of the United States and other countries. In addition to the regular lectures to be given by the faculty of the college, occasional lectures or short courses will be given by gentlemen of eminence, on the various sciences connected with Agriculture and Mechanics.

A Bible exercise once a week during the whole course.

This may and probably will be somewhat modified from time to time after the classes have been all organized and experience has made suggestions of desirable changes. It will be seen upon examination that these studies are all of great practical importance to the farmer, being admirably adapted to secure thorough mental discipline and valuable agricultural knowledge to all who pursue them with fidelity.

From the examination made at the time of this visit the board are thoroughly convinced of the great importance of this institution to the agricultural interest of our state. To be sure it is yet in its infancy, but it has already made all the progress that the limited means at its command, and the brief time it has been in operation, would lead any person at all acquainted with the discouraging embarrassments attending the establishment of a new college, to anticipate, and even more. The gentlemen standing at the head of it and having it in their immediate charge, are live men, fully abreast the spirit of this new age, possessing great energy and large experience in the practical instruction of young men.

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It does not become this board to lavish encomiums upon these men, but they feel constrained to say that the advancement made at Dartmouth, since the accession to its Presidency of Dr. Smith, affords conclusive evidence of the possession on his part of a general wisdom, keen foresight, extended view and executive ability seldom met with. And no less fortunate has the Agricultural College been in its leading Professor than it has been in its President. The peculiar training enjoyed by Prof. Dimond, both upon the farm and in schools of learning, based as it has been upon natural talents of a high order, and supplemented by rare business capacities, has most admirably fitted him for the important post he occupies so ably. Were this a fit occasion, we could also bear witness to the eminent ability of the several other gentlemen associated with these upon the faculty of instruction.

It now remains to be seen if the people of New Hampshire will second these devoted efforts by their patronage, and by such other means as may be at their command. If the farmers of this state wish to raise themselves to a higher plane of intelligence and to a greater success in their calling, this noble institution, devised and erected with special reference to their improvement, stands with open portals to aid them. We sincerely hope that they will not only avail themselves of the advantages thus extended to them, but be ever ready to do what they can to encourage its officers and render its existence as lasting as the blessings it diffuses are beneficial.

One embarrassment has arisen which should not be allowed to stand long in the path of its advancement. This is the want of a suitable building in which its students may find room and board. The apartments of the Academical Department are already more than filled by its own students. The rent of those afforded by private houses can be had only at prices beyond a limit convenient for many of the students to meet.

It is a suggestion of Mr. Conant that a suitable building be erected, at the earliest practicable day, to meet this pressing necessity, towards the cost of which he offers to give five thousand dollars, on condition that the state will furnish the balance of the sum required, which will probably be some twelve or fifteen thousand dollars. That such an appropriation would be a wise one we have no doubt, and commend its serious consideration to the legislature, confident that such an investment will enure to the great benefit of our agricultural population for generations to come.

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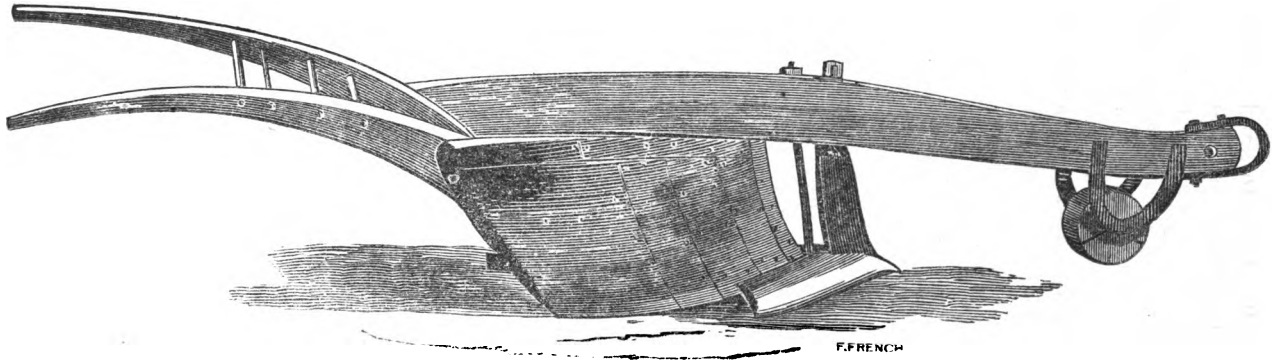

THE WEBSTER PLOW,

MADE AND USED BY DANIEL WEBSTER, AND NOW IN THE MUSEUM OF THE AGRICULTURAL COLLEGE, AT HANOVER.

Length of plow, 13 feet; beam, 9 feet, 1 inch; handles, 6 feet, 4 inches; distance between handles, 2 feet, 10 inches; width of mould-board, 20 inches; width of share, 16 inches.

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THE CROPS AND DROUGHT OF 1870.

[An address by James O. Adams, Secretary of the Board, delivered at the Farmer's Meeting at Concord, November 29th, 1870.]

The subject which has been assigned to me, at this meeting, is the only really *dry* one in the programme; but though it be dry, and in its consideration I must be confined to a detail of facts, I will endeavor to present the matter in such a way as to suggest profitable inquiry and to lead to beneficial action, by the soil-workers of New Hampshire.

It has been no uncommon occurrence of late years, to experience sharp and sometimes withering droughts; they have usually commenced in July and almost invariably terminated in August, or early in September.

The most widely extended drought, within my personal knowledge, took place in 1854. It extended over much of New England, but was most severely felt in the middle states and the west; but neither the dryness of 1854, nor that of 1865, both of which were noted in meteorological reports, in some sections of the country, equalled in severity and destructiveness that which prevailed the past season in nearly every section of our state, and extended over New England and no inconsiderable portion of New York.

In this section, the dry season dates from early in July,—a rain falling July 8th, and no more with the exception of two or three showers, scarcely one of which was accompanied by thunder and lightning, until late in September.

Day after day the sun poured down his parching rays; weeks passed and no joyous rain fell upon the arid earth; even months rolled on and the heavens withheld their accustomed outpourings from the clouds. Vines withered in the heat of successive days, and at length refused to revive under the refreshing influences of the night; the cereals had too far matured to be seriously influ-

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enced by the lack of moisture, but even wheat stalks were shrivelled, and oats and rye, unless early sown, were deprived of full grains, while Indian corn, the crop next to grass on most of our farms, rolled up its broad leaves in the midday sun and felt them wither like a scroll. The excessive heat of the season continued from day to day, penetrated the soil and expelled or dried up the moisture which nourished the root crops, until they yielded to its power, grew hard and woody, and shed their leaves before the first frosts came upon them. The forests put on a pale and sickly look, and strewed the ground with withered leaves before dog-day weather passed by. Fruit trees, sending their roots deep into the earth, alone maintained their full vigor, and they, even, in some localities, gave evidence of the baneful influence of the drought, by the blighted fruit which lay scattered beneath their verdureless branches. Springs were at length reached and dried; the streams ceased to flow, and cattle, uncared for by busy or neglectful owners, perished with thirst. Wells failed that were never dry before, and rivers fed by the lakes reduced the fountains at their source to the lowest limit permitted by the embankments at their outlets, until mill-wheels, that had run for half a century, refused to perform their office. Men looked alarmed, farmers were discouraged, and the consumers of farm growth who produced nothing that they consumed, entertained well-founded apprehensions of greater expenditures to supply their tables than their incomes would admit.

The harvest was early completed, for the drought had ripened what it had not destroyed, and farmers were anxious to know the worst and to prepare for it.

Strange as it may seem, and contrary to anticipations, farm crops have not been greatly reduced except in some specialties, and in certain locations. I have had an extensive correspondence regarding the products of the past year when considered side by side with those of former years, and have taken no slight pains to look over newspaper and agricultural society statements. I conclude, taking the state as a whole — remembering that in some sections there has been no diminution of products — the deficiency is nearly as follows:

Grass, twenty-five per cent. in quantity; upon the crop harvested ten per cent. is gained by the superior quality of the hay, which was mostly made in clear, dry weather. This deficiency of twenty-five per cent. should not be charged to the dry weather,

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except in special cases, for grass was generally fully grown and much of it cut before the inception of the drought in the central sections of the state.

Corn, in most localities, showed no reduction, and as a whole was not more than ten per cent. less than the crop, not of 1869, but of ordinary seasons.

Wheat, rye, oats and barley did not fall short of an average yield more than ten per cent., unless we give a little higher rate to oats, which were not generally sowed sufficiently early to mature before the drought reached them. Buckwheat we may put down as an entire failure; beans, as somewhat below the average; vegetables of nearly all classes were reduced about one-half; potatoes, squashes and the cabbage tribe, though in some parts but little affected, were, I am confident, fully thirty per cent. under the usual yield. Fruit, despite the drought and other adverse circumstances, was, in most sections of our own state, measured in double quantities; and this was the only crop that has exceeded an average of past years.

The diminution in products has caused a corresponding decrease in harvest labor and in transportation, thus reducing the income and support of the laborer and diminishing the profits of invested capital.

There is another consideration demanding attention in estimating the loss of farm crops,— the quality as depending on the drought. It may excite surprise when I suggest that there is a material deterioration in the character of many products of the soil.

While the cereals which had advanced beyond the influence of the drought were superior in quality, the root crops, especially potatoes, were greatly depreciated; they were so thoroughly warmed by the excessive heat as to lose their vitality, and many varieties which have in other seasons been highly esteemed, were, last year, unfit for the table.

There is still another consideration forced upon us in this connection,— the pastures have been so barren during the latter part of the season as to cause no slight reduction in the amount of butter produced, and possibly to affect somewhat the cheese manufacturing business. That it has had its influence on growing animals and on those fattening for the shambles is beyond question. We cannot estimate the loss by the failure of animals to lay on fat, in consequence of the impoverished pastures, nor can we meas-

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ure the lack of growth in young stock through the same influence. It is unquestionably very perceptible.

There is still another matter that must not be disregarded in estimating the loss caused by this one agency. We may name it, though we can only approximate to the real effect of the excessive dry weather on the fields and pastures, on the orchards and woods, on lakes reduced in the quantity of water which will not be soon supplied, on springs dried that have not been reached by autumn rains, and which may not be filled again, even when the snows of winter shall disappear before the rays of an April sun. We cannot measure the consequences that may follow, for the drought is not yet ended. The ground is still dry a few inches below the surface; the banks of even small streams are unfilled, except temporarily, and many cubic feet of water will be required to replenish the exhausted reservoirs that have supplied our rivers.

Thus far in our examination of the subject before us, we have looked only on the dark side — only on the debit page of the account — and thus looking we conclude that the tiller of the soil, the grazier and stock-breeder have had nothing to encourage them in their occupation for the year that is now closing.

But there is another view to be taken; we may gather a few items to record as "per contra," and thus prevent the balance against us being excessively large.

What, some of my hearers are ready to exclaim, do you undertake to convince us that there are benefits resulting to the farmer from such a drought as we have experienced? I do, and will enumerate some of them, and invite you, when I sit down, to show us wherein I am in error.

First, I will name the fact that this summer and autumn, up to the present time, have afforded unusual facilities, in consequence of the drought, for farmers to pile up and draw away immense quantities of muck, and even to clear out entirely many bogs and miry places, which will hereafter contribute to the profit of the owners. This will be considered an advantage, estimated according to the opinion of the farmer regarding muck as an absorbent or fertilizer.

From this point, which we reckon as an advantage, though small, we advance to one of greater importance. All through our state there are swamps and marshes, which have never been of any perceptible advantage to the land owner, for the reason that

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they could not be worked by the plow, nor yet improved by top-dressing, because their miry or watery condition forbade successful drainage, and discouraged every attempt to reclaim them from the dominion of lake or pond, or muddy stream upon which they bordered. During the year, so dry did they become in many instances that the water beds about them were lowered one, two or three feet, and acre upon acre of them, that never before were trod by foot of the toiling ox, have been freed from root and rock, and suffered their hitherto unbroken surface to be inverted by the conquering plow. Hundreds of acres during this season, in our own state, received the first mark of improvement since the industrious beaver felled the trees upon them and constructed his dam at their lowest inclination. The reduction of the water bed in these swamps will enable the cultivator to subject them, year by year, to the hand of improvement, until not many seasons will pass before large tracts of waste land will groan beneath the burden of the timothy, red-top and fowl-meadow which will be produced. If the extra amount of grass produced annually, in consequence of the year's drainage, be but one per cent., it will add hundreds of tons to the sum total, to say nothing of the improved quality, and nothing of crops grown introductory to a proper preparation for permanent mowing.

The continued drought for so many days and weeks, the unabated heat poured down from a cloudless sky, had, in my judgment, an effect on the soil, opening pores, allowing the vitalizing power of air and heat to penetrate its recesses, and thereby effecting chemical and mechanical changes which will benefit the soil.

But as this is a subject which involves the principles of chemistry, and, for a full consideration, would require too much time for the present, I pass it with the mere mention, inviting discussion on the point, and referring the hearer to works on agricultural chemistry.

The same influences that will destroy ordinary vegetation will have a similar influence on the noxious productions of the soil. Hence, we may infer that, when corn leaves wither and vines droop and perish in the sun's rays, many weeds of noxious character will yield to the same fierce heat. I am aware that a strong degree of heat is required to destroy the vitality of seeds, but the stalk that produces the seed may fall before a sun-stroke that would only enliven the matured kernel or grain.

During the early part of the season there was discovered, every

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where, an unusual number of noxious insects. They seized upon the garden, the orchard and the field, and desolated many acres that, under usual influences, would have afforded abundant crops. The swarms of insects would indicate an increased number at the opening of another spring. That we shall still be plagued with destroying flies and worms, I have no doubt; that they will come in multitudes which no man can number will be literally true; but I believe there will be legions less in consequence of the intense heat and the excessive drought of the past season. Millions of ova which have been deposited in the soil, on trees and on vegetation dried and parched, I am persuaded were destroyed by the sun and heated air.

Although these benefits which I have named may result to the farmer from the drought, there is one other fact which is of still greater importance, if it be properly considered,—I mean the lessons which have been taught us by the meteorlogical influences of the year. These I propose to answer briefly, though each of them would tempt me beyond the limits of propriety.

I have learned from practice that in a continued dry season it does not pay to irrigate with watering pots and force pumps. It is a process too expensive and too laborious. It may do in a garden or a parterre of flowers; it may answer in a conservatory or hot-house, but when employed on a large scale and for any considerable period it becomes burdensome and generally useless. If artificial watering is to be done out doors to any extent, I would make the application in the absence of sunshine. This is a lesson I have learned by experience from the drought.

Similar experience, on a larger scale, will also teach this lesson, that on most of our farms extensive irrigation is impracticable, expensive and ineffectual. On our side-hills, water may, in some instances, be conveyed from a spring high up the side, and distributed successfully on the lower inclination and on the plains below, but in most cases, however much withering crops and burning sands may impel us, irrigation cannot be practiced in our section of the country.

We are taught by the result of this year's cultivation to use counteracting agencies to a liberal extent. The application of salt, both in composition and in its natural condition, in the hill or drill with the seed, or spread broadcast on the cultivated field, will contribute to retain and even to attract moisture to the roots of vegetation. No harm can result from its prudent use, though

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the season subsequent to its application be unusually wet. Its effects in other directions will compensate for its cost.

Ashes, too, are among the best dressings that can be given to dry and leaching soils. I need not enlarge in regard to this; every farmer has seen their effects on a larger or smaller scale, and will not be so blind to his own interest as not to apply all the ashes he can secure to his cultivated fields. Plaster and the phosphates may also be used as preventatives of the effects of drought. The use of the articles named leads us to carry out the idea of stimulating or enriching the soil by the application of stable and other manures, from live animals and decaying vegetation. In a word, we would adopt high farming as the very best antidote to drougths. I would plow deep, and, so far as practicable, I would spade or trench the soil, assured that no better practice can be adopted to keep the land moist, to a reasonable depth. I would use all the animal and artificial manure I could command, and work it thoroughly in the soil. The difference in the appearance of a piece of land cultivated in that way and another tilled in the ordinary manner is wonderful. I have, at this moment, in my mind, garden lots deeply plowed, spaded to the depth of eighteen inches and made rich with the manurial products of the barn-yard and hog-pen, which were covered with a luxuriant growth, while other lands, side by side with them, that have not been thoroughly tilled, yielded to the influence of the weather and were profitless.

"High farming," which means abundant manuring and deep stirring of the earth, we put down as the first and chiefest measure to be adopted to prevent the destructive effects of drought. Deep and frequent plowing, thorough pulverization of the soil, must be practiced, if we would escape the baneful consequences of the past season. Autumn plowing, as well as that in springtime, the turning in of green crops and sub-soiling, should all be resorted to in order to prevent consequences like those we have just suffered.

The influence of forests on the humidity of the atmosphere has been fully discussed at agricultural meetings, in our own state, by men who have made the matter a subject of study, and need not be named here.

Underdraining, which we would naturally think would be serviceable on wet lands only, has proved to be of equal value in seasons of drought on dry soils. It drains the land of collections of water, and makes it more porous and capable of letting the

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moisture up, on the principle of capillary attraction; there is the strongest practical testimony on this point.

The results of farm management this year should teach us to adopt early planting, especially of potatoes and such crops as need much moisture to produce a compensating harvest. Adopt the earliest varieties that are reasonably productive, and we shall be more certain, ordinarily, of a harvest. Take, for instance, the Early Rose potato, or the King of the Earlies, and a fair crop will be the result; while late varieties, late planted, will almost invariably prove a failure in amount, or are worthless for the table. Many of us this year would not be driven to the necessity of using inferior potatoes had we adopted the practice recommended.

Thus, gentlemen, have I been over the ground suggested by my theme. I have touched many points and very likely omitted some, which will not escape the keen eye of the practical farmer present. Trusting that you will complete what I have commenced, I leave the question in your hands.

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FERTILIZERS.

MANURES — ANIMAL AND ARTIFICIAL.

The policy of investing the hard-earned money of the agriculturists of the country in commercial fertilizers has been so thoroughly discussed during the past year, that there remains but little more to be said upon this question. Yet it is one of the utmost importance, for if our interest demands their manufacture and use, it is none too soon to know it; while, on the contrary, if they do not supply the requirements of the soil, and consequently the wants of the farmer, we should ascertain it now, and cease spending our money for that which is unprofitable.

The discussion of the subject shows that many of our best farmers put but little faith in these fertilizers, while a very large majority in New England will not put their seed into the ground, unless accompanied by some concentrated fertilizers, in the shape of "bag manures," as its opponents are often pleased, sarcastically, to designate them.

One thing is quite certain, that this enormous trade in concentrated manure has not sprung up in a night or a year, but, on the contrary, from small beginnings, has assumed a proportion which causes us all to reflect, and to ask, "Does our interest demand its continued manufacture and use?"

The fact that the sales are largest in those localities where the land is most fertile shows that it has bravely stood the test, beside stable and composted manures. In addition, the fact that it is the best class of farmers who use it most largely, like Col. Clough of Canterbury, Judge Roberts of Rollinsford, J. B. Walker of Concord, Col. J. W. Pierce of Greenland, and John L. Kelley of Franklin, and the fact that nearly all the crops which have won our premiums have been grown by its use, is evidence of its appreciation

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by the first agriculturists of the state. In the single town of Hatfield, one of the best farming towns in the whole Connecticut valley, and whose soil is cultivated by some of the most intelligent agriculturists of the nation, the sum of $35,000 was expended last season for commercial fertilizers, and the farmers say that it not only pays for them to invest so largely, but that it is the only course for them to pursue, to sustain themselves in these days of high-priced labor.

Many years have elapsed since we learned our first lessons in agriculture of the English farmer, and those lessons have, in the main, been mostly profitable ones to the agriculturists of our country. Long ago the cultivators of Great Britain found that their crops were depreciating, and, upon an investigation of the causes, discovered that their continued and uniform system of cultivation, the constant raising of cattle and the produce of milk, had extracted elements from their soil which were indispensable to its successful cultivation. Ever quick to apply an efficient remedy, England immediately began to save and collect the bones and other fertilizers within her reach at home, and for more than half a century the whole world has been a field, wherein she has been collecting bones and ammoniated manures, to restore her soil to its original fertility. England's fields are to-day more green and productive than in the palmiest days of English agriculture. Do not our interests demand that we profit by her example, and not wait until we are in the condition she once was in, but commence immediately to use all the means within our power to restore our soil to something like its original fertility?

Sufficient experiments have already been tried, not only by agriculturists but by scientific men, to demonstrate that ground bone and the phosphates not only produce as satisfactory results upon this side of the water as the other, but are absolutely indispensable here as well as there, upon land which has been cultivated a long series of years, and manured entirely with animal manure. A deep-seated prejudice has arisen against all commercial fertilizers, because some have proved worthless. Until, by recent legal enactment, the manufacturer was compelled to put a label setting forth the analysis of the article he was offering for sale, upon each package, the purchaser had no protection from the tricks of unprincipled dealers. Even under our present law, the analysis is printed so *learnedly* as to be understood only by the chemist.

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We, who do not thoroughly understand even our own language, cannot tell by looking at the little paper tacked to the cask, whether we are buying a really scientifically prepared article or highly ammoniated swamp muck and coal cinders.

The putting upon the market of such poor mixtures has induced many of our agriculturists to experiment in "home-made superphosphates," with more or less success, though we question the ability of our farmers to successfully compete with the established manufacturer, in the production of an article, where means, facilities and thorough chemical knowledge is so necessary to the manufacture of a really valuable article.

We do not believe, as it is sometimes asserted, that the introduction of these special fertilizers has an effect to lessen the amount of other manure manufactured and applied. But we do believe in saving and making all that is possible, and in the use of proper absorbents; and also in the policy, profit and necessity, even, of purchasing commercial fertilizers, for the conclusive reason that a large proportion of our hay crop and other products are carried from us to the cities, from which consumption there no equivalent or fertilizer is ever returned.

Our pastures are even more worn than our fields, and we predict that the time is not far distant when these fertilizers will be applied to them, or our grazing lands will become worthless, simply because we have for a century been extracting from them the phosphates necessary for the growth of our animals and the production of milk, without returning anything to produce the like again.

More than half a million dollars are annually expended for commercial fertilizers in New England alone, while at the south they are still more extensively used. Not only the warehouse of the wholesale merchant is filled with it, but no country "storekeeper," upon the "backroads," considers his stock of goods complete without a few barrels or tons of superphosphate in his assortment, and the money of the busiest laborer upon the continent, the farmer (too often of limited means), is cheerfully drawn to pay for a good article, considered almost indispensable to his success.

No law was ever enacted which visited too swiftly or severely a class of manufacturers who would put upon the market an article for these workers of the soil which is spurious and worthless. That there are manufacturers of these articles who are honest

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men and jealous of their reputation, we know from our own personal knowledge and that their articles of manufacture have stood the test of experiment and time, with increasing satisfaction, and with such confidence that the purchaser feels entirely secure of good crops, if the "brand is right," and the season propitious.

The only safeguard the farmer has is to buy that which has been largely used and stood the trial of use and years, and discard those kinds which come among us with splendid names and splendid certificates, but which have too often proved to be little better than road-side sand.

The interests of the consumers of these fertilizers demand a thorough analysis of every kind exposed for sale in our markets, and that the analysis be explained in terms the humblest can understand, and, if worthless, avoid. The interests of the farmer also demand the thorough exposure of all kinds not meeting the requirements of our people, or not proving to be equal to the pretension.

The law of the state imposes on the Board of Agriculture the duty of "analyzing such commercial fertilizers as may from time to time be offered for sale in the state," but as no means were placed at our command to execute the work we can only report that as yet nothing has been accomplished in this direction. Members of the board are experimenting to some extent, not with specimens sent for special trial, but with samples purchased of the trade in different sections of the state.

It is an important matter for the farmer to know whether these articles now in general use are valuable or worthless, and the board have determined to put them to the "test of the retort and crucible," at the laboratory of the Agricultural College, as soon as the Professor of Practical Chemistry is prepared to give them an examination. Professor Dimond, whose interest is in the prosperity of the farmers of the state, will give his services and his chemical experience to aid the board in this duty, the state being subjected only to the expense of the chemicals employed.

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SELLING HAY AND BUYING MANURES.

[An address by J. Frank Lawrence, Esq., Member of the Board, delivered at the Farmers' Meeting at Concord.]

Born and bred not only a farmer, but a laborer on a farm, I propose to give you my ideas upon the subject of manures without fear or favor, and without the logic or rhetoric deemed so essential by many, were they occupying my position before you to-day.

I am aware, also, that in giving you my ideas, which are the results of my experience, I shall meet with opposition from gentlemen here whose views are entitled to great consideration; nevertheless, I believe the same system of farming will do equally well for others as for myself.

In saying what I may hereafter in favor of composted manures and special fertilizers, I do not desire to be understood as placing but little value on stable manures.

I do not believe all the ingenuity of man will ever discover or concoct anything so thoroughly suited to every variety of soil as pure, unmixed manure from the barn-yards, when properly preserved and applied; but knowing our entire inability to sustain the primitive fertility of our soils with this alone, it then becomes us to inquire for some substitute or addition to restore our farms to their original fertility. England not only, but all the civilized countries of the other continent, a century ago, felt the necessity of this requirement, and began to look around themselves to supply this want. It was found that the constant breeding of cattle for centuries, and raising of the immense crops necessary to sustain their crowded population, had taken from the soil, before they were aware of it, those elements so indispensable to successful farming.

During the last half of the eighteenth century the agricultural statistics of Great Britain will show a fearful decrease of their crops of all kinds, per acre, from those of a century previous, although to-day their statistics will show an amount of crops greater per acre than was ever raised upon the green fields of either British Isle, even before their primitive fertility was in the least exhausted.

England to-day is spreading upon her fields fertilizers from every section of the world. One ship is bringing her guano from the Peruvian coast for her hoed crops and grain; another is bring-

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ing her fish crop from her fisheries; while the whole world is a field wherein she is collecting bones, to return to her soil the phosphates which a long and careless system of farming had extracted from it. In an agricultural sense, England is herself again, and it is a shame and a disgrace to us if we can not profit by her history, and not wait until we are in the condition she was a century ago before we avail ourselves of all the means within our power to keep our soil as fertile, certainly, as when transmitted to us by our fathers.

It is not necessary for us to wait and be obliged to import these elements to restore our lands, for if we will but labor intelligently, and carefully save and use the elements within our power to reach, we can save our noble country, and make our valleys and hill-sides blossom even more beautifully than in the days of our fathers.

I do not desire to advocate a system of book-farming, or a system so expensive that none but the wealthy can pursue it, but I desire to ask my brother farmers of New Hampshire, Do you avail yourselves of all the means within your power to improve the condition of your farm and crop? Is the manure from your cattle properly saved from exposure to bleaching rains and drying winds, and is it drawn direct from your yards, and properly applied and covered, so that its full value is saved when fermentation occurs? Have you placed muck, or some other absorbent, in your yards and beneath the manure heaps, which will be made almost as valuable as manure itself, when it has absorbed the urine from the stock and has incorporated with it the manure occasionally dropped by the cattle upon it, and when mixed with the latter and other matter that always should accumulate in a farmer's barn-yard?

I do not mean to say that common muck is of very great value when used entirely alone and in its crude state, although I have seen most satisfactory results from the application of muck alone when, after a year's exposure, applied to a soil almost opposite in character to the muck itself. But I do mean to say that but a small portion of our farmers place the value they should upon muck, or realize the profit they might from its use as an absorbent, and its judicious application.

How large a portion of our farmers consider their labors over after securing their hay, until harvest time comes! How many of their barn-yards are grassed over and look as cleanly and beautiful as a field in June! How many of such farmers have an absorbent even for the suds and wash from their homes? A rank growth of

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weeds indicates where enough fertilizing matter has gone to annually raise a half acre of corn, and this condition of things will exist until a new and more enterprising owner occupies the farm.

Such farmers are always complaining of their taxes, are turning portions of their fields into pastures, and are presenting evidences of their shiftlessness or laziness in their persons, clothing, buildings, and everything else, until at last they sell their farms, completely run down, complaining that farming is unprofitable. Such men will not succeed as farmers or anything else, and will disgrace any business or profession they may enter into.

How often such farms are purchased, and cheaply too, by an intelligent laborer, who, in a few years, brings back the farm to its original fertility, the buildings to their former cheerful and homelike appearance, himself and family an ornament instead of a disgrace to the neighborhood in which he lives.

Such a man does not cease his labors when his hay is secured, but goes from his field to his muck-bed, and, though his barn-yard does not present the green appearance it did under its former owner, his fields look green and beautiful and reward him with crops which not only gladden the eye, but fill his purse.

But I am wandering from the subject, and will endeavor to return to the main question under consideration, viz., the policy of selling hay, or a portion of it, and keep up the condition of our farms by purchasing special manures.

I believe in the policy and profit of this system upon a good farm, and would never advise farming at all on land that is, and always was, actually poor. Ten years ago I took possession of a farm of nearly three hundred acres, which was in a fair state of cultivation, and upon which both my father and grandfather had spent most of their days. They had never sold any hay, always keeping a large stock of cattle, and consuming all that was raised upon the place. I immediately reduced my stock very much; have sold every year fully two-thirds of my hay, and notwithstanding my neighbors at first said that I should completely run the farm down, and some of these men are on this floor to-day, who will tell you that I not only increased the productiveness of the farm, cutting one-third more hay, and of much better quality, but will tell you also that a year ago I received the first premium of fifty dollars for having the best cultivated farm in the county. Not only my field but my fences and buildings were improved, and the best of it all was that I had made it profitable.

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True, I aimed principally to raise grass, but I did not reach the result by resting from my labors after my hay-crop was secured; and, though I was busy in spring-time, I was always more so in August and September.

I rarely planted over an acre of corn, for in these days of expensive labor, I think the farmer should use the hoe less and plow more. Just as soon as my hay was secured, I commenced to plow in my low land, laying it down in beds for drainage, seeding it with herdsgrass, and applying superphosphate, bone-dust and ashes, going over this land every few years, keeping the grass heavy and clean. An energetic man, with four oxen and a good teamster, can wonderfully improve his farm in the month of August in this way; and the receipts from the sale of a very few tons of hay will purchase sufficient manure to fertilize a great area, if expended in ashes and judiciously applied.

By judiciously applying manures, I mean to apply the right kind of manure to the right kind of land. In plowing in my fields I often inverted different kinds of soil. One corner might be deep, rich mud. On this I endeavored to get off the water, and then applied some quickly-acting fertilizer like guano, simply to assist in getting "a catch," as we term it, of the grass-seed. Another portion of the acre might be only so low that if plowed into bed of proper width, the dead furrows would carry off the surplus water, and be easily mowed with a machine.

On this kind of land I have used tons of superphosphate, and during ten years' use have found it not only a quickly-acting but a lasting manure.

While I know it seems almost incredible that so small an amount as five hundred pounds to the acre should last over the season, still, with a phosphate made with a proper proportion of ground-bone, what manure can be more lasting?

On the remaining portion of this acre I may have clayey knoll, or some land quite poor, and on this I have applied leached ashes liberally, and always with good success, though quite expensive, it costing more than forty dollars per acre to manure with ashes, and but fifteen dollars with the phosphate.

After plowing all I care to in my low land, and getting out some muck, I turn over some acres of higher ground, and harrow it down to grass. I like to plow under as much second crop as possible. I apply here plaster, ground-bone, superphosphate and all the composted manure I can spare, and on all these lands I

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have inverted, whether high or low, I get good crops of grass the ensuing season. Did I simply invert the sod on my ground, applying no manure, I still think I should be amply paid for my labor, for careful experiments show, that in plowing partially run out fields, we bury under many tons of matter which will decompose and enrich the soil. Does any sane man believe that you can turn under such a mass of matter without enriching the soil?

Hence, I say I am justified in saying, use the plow more and the hoe less, at the present high price of labor. But I put on this land all the composted manure I can spare; much more on knolls than in the valleys, for it will wash there soon enough. The committee who visited my farm said they had never seen so much crop in one field before, and I certainly never purchased ten dollars' worth of barn-yard manure, because too expensive when purchased by the cord and drawn six or seven miles.

In pursuing this manner of farming I have not expended a large amount for labor, and that chiefly in haying time and the two succeeding months. I honestly think that if I raise one thousand dollars' worth of hay to sell, I can improve my farm as much with two hundred dollars, judiciously expended in labor and manure in August and September, as by consuming the whole amount of hay upon the farm. Does any body believe the remaining eight hundred dollars received in cash for the hay could be realized in profit from feeding it out? Could more than half of it, or even that, after taking into account the expense of feeding it out, and drawing out and applying such bulky manure as would be made from it.

Coming down to hoed crops, there are many men in this house who will tell you, that of corn or potatoes planted side by side, one row with a shovelful of barn-yard manure in the hill, and the other with a spoonful of properly made phosphate, the difference is often in favor of the concentrated manure.

In raising corn, I always break up my land late in the fall, and spread upon it the composted manure, made by drawing muck into my yards the fall previous, covering it slightly with rotted turf, upon which my cattle are kept during pleasant weather in winter, and nights during the next summer. This system is much cheaper and better for the land than manuring in the hill, and the freezing and thawing of winter and spring carry the strength of the manure into the sods just deep enough for the corn the next summer. In spring time, I put a large spoonful of superphos-

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phate into the hill, and I have never failed to raise good corn. The saving of expense in handling over manure in busy spring-time will almost pay for the superphosphate, and I have always raised better corn with my manure spread in the fall than if spread in the spring, when it is often dried too much to be of value to the corn, if not for all the future, by the hot sunshine and drying winds of June and July.

I never plant but one year, and on the corn hills, the ensuing spring, I spread my green manure from the heaps, immediately plow it under and sow grain, which is generally barley. I am undecided in my own mind whether this is the proper way to apply green manure, or whether I should receive more value from it by mixing it in my yards with more muck, and applying it the ensuing autumn in its composted condition.

I am afraid some of my brother farmers, who have so kindly given me their attention, will say that I am young, visionary, and had a better farm than most others have. In reply, I will say, that I have all my lifetime followed the occupation of a farmer, laboring to the extent of my powers with my own hands, honestly claiming that I have won my bread with the sweat of my own brow, and that in following this system, I have made it remunerating. True, I had a good farm, with low land well adapted to herds-grass, and upland to witch-grass, still I claim that only good land should be cultivated.

I do not view with terror, or even sorrow, the fact that the census shows the lessening of our population, for I do not think one-half of our state should be cultivated, being better fitted for grazing, or the growth of wood, although I know this would be a hazardous remark for a politician to make. Land should never be cultivated that will not pay for cultivation; and I know whole towns in New Hampshire can be named, whose lands are worthless, and no man there ever made enough from their cultivation to make even a comfortable home for himself, his wife and his little ones. The homes, the lands, the fences, and the appearance of the inhabitants themselves, indicate that the people simply stay there, without enjoying any privileges themselves, and where they cannot reasonably look forward to any for their children.

Thrifty villages, it is true, may spring up around their waterfalls, but those who cannot find employment there, should come into sections more favored in soil by nature, where good land, al-

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though commanding high prices, is always cheap at that, and where the farms are now too large to be properly cultivated. On sections of land like this, educated labor will always be fairly remunerated.

Then, I say, make all the manure you possibly can upon your farms, and apply it so as to obtain the best possible results. Do not let a single cartful of rich matter, perhaps the accumulation of ages, remain where it is valueless, but draw it where it will enrich you and your fields. Purchase all the barn-yard manure the price and cost of applying will allow you, for you can get nothing better. Then, in addition, if you spend some of your earnings for some standard fertilizer of known valne, you will find it a profitable investment. Profit by the experiments and experience of others, as well as by your own.

Raise crops that you can afford to raise, and none other. If you are satisfied you can purchase western corn cheaper than you can raise it here, buy it, while others laugh and you win.

Time and necessity will regulate the prices of all farm productions, and if, at the present price of labor, you are satisfied that corn can be raised more advantageously upon the broad prairies of the West, and you can pay for it more easily by selling a few tons of hay, do so, though it may seem almost sacrilege to a class of farmers, who religiously believe in consuming all their products upon their farms, but who, at the same time, lack enterprise to use the muck they have in abundance; farm as their fathers farmed, regard all departures from their established rule as dangerous innovations, and sneer at the man who avails himself of the experience of really scientific and intelligent men, and who would as soon put ratsbane into their soil as ashes, compost, superphosphate, or anything else, unless directly from the manure heap made during the winter, months of which are spent in feeding out simply meadow hay.

In thus fearlessly and freely giving the farmers of our state my ideas in regard to farming, and my practice in carrying them out, I have doubtless advocated the employment of means not generally adopted or approved by our people. If I have succeeded in suggesting a single new idea which may be of benefit to my brother farmers, I am more than satisfied with what I have accomplished.

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DRESSING WITH COMPOST.

[Remarks of M. D. Lawrence, of Massachusetts.]

I will give you a system of fertilization practiced on a farm of some eight hundred acres, of similar formation as your own soils, with which I have a business connection.

To thoroughly understand this matter, it is necessary for us to know what we manure for, and from whence comes the necessity of any fertilization whatever. I take the position that most new lands contain the elements of plant food in proper state to make a crop. But for years we have been drawing from this natural fountain, and have not deemed to think it ever would need replenishing. The time has now come when, in order to raise as large crops as in former years we had a right to expect, we find we must return to the soil more vitality in the shape of manures than ever before was necessary.

The vital question then with us is, How shall we do this at the least expense? We want to know first, What are the elements of plant food? According to the statements of Prof. Ville, four elements are necessary with which to re-stock our fields in order to restore the fertility of which they have been deprived through constant cultivation. These four cardinal principles are ammonia, potash, phosphoric acid and lime. The analyses of the different crops grown in New England show that they draw from the soil, in different proportions, all of these four elements. Wheat, corn, rye, oats, millet, and in fact every product of the soil, call for different combinations, but all must have a certain amount of each in order to produce its full development.

How do we, in the application of excrementitious manures, rejuvenate our soil? How do we by applying the product of our barn-yards help our crops to grow? Do we in this manner stimulate the soil so as to cause it to put forth extra effort to its own detriment, or do we actually put within its grasp the very principles that go into the grain and grass we desire to produce? What is the application we really make? Acccording to Dr. Nichols, editor of the *Journal of Chemistry*, and a practical farmer too, a cord of manure, of three thousand pounds weight, contains two thousand four hundred and fifty-six pounds of water, one hundred and thirty-eight pounds sand, carbonaceous matters of some value, as muck, straw, chaff, &c., three hundred and thirty-

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two pounds, leaving seventy-four pounds of actual cash value. This seventy-four pounds contains all the nitrogen, soda, lime, magnesia, phosphoric and sulphuric acids, chlorine, iron and alum, and he gives the cash value of all these substances as $3.35. This is probably a fair estimate.

Now don't class me with those who advocate the disuse of barn-yard manure. Make all you can; use every means in your power to increase your manure heap; save your slops, save the urine from your stables, for in this you have a most valuable product. Compost all the waste matters of your farm in such a way as to bring money in your pockets, for that is really the end and aim of all this talk.

But I am wandering from my subject. I was about to tell you how we compost. We cut rushes, foul grass, weeds, tops of bogs, turf, potato-tops, corn-butts, sweet-fern brush, or any other substance that disfigures our pastures, and cart to any convenient spot near the field we wish to fertilize. If we put in our coarse and strawy manure so much the better. And now for the pile. Prepare a place early in the fall by leveling the earth, where the water will not stand during the winter, ten feet wide by eighteen long. On this place a layer of this refuse stuff one foot thick; put on this four inches of muck, peat, or loam; on top of this spread as evenly as possible one-half of a barrel of a pure bone phosphate, well made and reliable, and fork it into the layers underneath, until you are sure it is evenly sifted through the mass. Build up in this manner until you have in the pile three half-barrels of phosphate, and of course, three layers of the other materials. On top of this put a thin layer of straw or leaves, and cover the whole with from four to six inches of muck or loam, and let it remain till spring opens. Two or three weeks before wanting to plant, begin at one end of the pile and fork it over thoroughly, still keeping the relative shape of the pile, and reduce the mass to fineness with the fork or shovel. Spread this on the furrows of an acre of ground and harrow in well. Use half a barrel of the same phosphate raw in the hills, being careful not to let the seed come into close contact with the phosphate, and I have not the slightest doubt that this will prove the cheapest manure you ever used. At any rate, there are now on the farm with which, as I said before, I am connected, five hundred cords of just such compost as I have described, ready for use on our spring crops. And, gentle-

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men, we believe in it, and why? Simply because we have tried it and find the best results come from such manipulation. We really get phosphoric acid in large quantities from the mass of green refuse used, and from the muck we get from three to five per cent. of ammonia, both of which you are aware have a decided agricultural value.

One word more and I have done. How does this mass work? Go to the pile in the dead of winter, break through the frozen crust of from one inch to three in thickness, (and you never will find it more,) pull out a bunch of brakes, and you will find it covered with myriads of worms who are feeding on it, and thus, by passing it through themselves, rendering it in the best possible condition to be taken up by the growing plant. This process is going on all winter, and in the spring you will be surprised at the changed condition of your pile. The germs of the insect life are in the material and are brought into increased action by the presence of the acids in the bone phosphate which you have introduced in the pile.

But some lazy farmer meets me with the objection, "But all this takes lots of work." True, it does. Do the men whom I see around me to-day, in different positions of honor, trust and the highest respectability, tell you they won these positions through sloth and idleness? Did they, if they had a piece of wet, cold land, sit down and say, "It will take so much work to till and drain that lot that I guess I'll let it go?" Did they, in everything or anything, content themselves to do as their fathers and grandfathers did, and console themselves with the idea that their whole duty was done? Never, no never!

PHOSPHATES AND THEIR APPLICATION.

[Remarks of S. C. Pattee, of Warner.]

Mr. S. C. Pattee, of Warner, is a working farmer who experiments, makes a record of farm-work, and keeps regular farm accounts. He had been making experiments for three years. He had used E. F. Coe's phosphate, A. Coe's, the Cumberland, and Rhoads's, also the Alta Vela guano, and other special fertilizers, and compared them with hen manure composted and sheep manure. He argued that sheep manure must not be exposed to the

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atmosphere; it would retain its strength for a long time if left as trodden down by the flock, but when forked over it would lose its force. Hen manure he combined with ashes and kept them dry so that the ammonia should not be thrown off. There is danger of destroying the virtue of manure by allowing moisture to gather in the compost. When covered by the soil the moisture would evolve the ammonia which should be retained in the earth to stimulate the crop. It is questionable whether ashes should be combined with hen manure. He gave a long array of figures showing the amount of fertilizers used and the results.

He had found that E. F. Coe's superphosphate gave the best results with him. He put but a teaspoonful in the hill, sprinkled about over a square foot of space. Corn could be grown for seventy-five cents a bushel. He applies eight cords of stable manure to the acre, keeps the ground up but a single year, and follows with wheat. Has had fifty-five bushels of corn to the acre, on light land, by applying forty loads of manure. Raised seventy bushels of wheat this year on two acres, a specimen of which he exhibited. His manure is all kept under cover. Keeps his cows tied up summer and winter.

Mr. Pattee gives the following as his method of making phosphate: I had on hand about two bushels of bones which had been saved from time to time in the course of a year. These I put into the arch kettle with a bushel and a half of ashes, one peck of lime and three pails of water, and boiled them two hours, when I found them to be completely reduced, with the exception of a few beef shin bones, which were put in whole; the feet and hoofs were completely eaten by the ashes. All the rib, back and head bones entirely disappeared. After boiling, I shoveled the mass into a box, and in the course of a week the work of dissolution will be completed. I shall then mix about the same quantity of muck with it, and use it about my grape vines and dwarf pear trees. There will be about a barrel of it, and it will be equal in value to any of the phosphates in the market, and will not cost me over one dollar in labor. I applied the bone and ashes to my grape vines last year, and the effect was wonderful.

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THE APPLICATION OF PHOSPHATES.

[Col. Clough's Statements.]

I have used superphosphate more or less for the last ten or fifteen years, and consider it a valuable acquisition to the fertilizers used in raising any farm crops, more especially the corn crop. I never plant a hill without its application, except a little, sufficient to ascertain its effects.

I plant from eighteen to twenty acres of corn yearly. Upon the field I spread all the manure I make upon the farm, which amounts to between three and four hundred ox-loads, of about half a cord each. This, with the addition of the phosphate, makes a good crop of corn, seldom failing. I consider my corn crop, with the field thus supplied with fertilizers, the most certain crop, and a very valuable one. The corn I feed mostly to my neat stock and hogs. The fodder I think pays nearly half the expense of raising the corn, especially the present year. I think I could not profitably raise corn to the extent I now do without the aid of phosphate. A little old, pulverized manure might measurably supply its place, but this would not be practicable even though I had the manure at hand, as it would require too much labor. I am confident it is economy to buy the phosphate rather than apply the manure to the hill, even though the manure were a gift, considering the present high price of labor.

To ensure a good crop of corn some good fertilizer must be applied to the hill, unless a larger amount of manure is spread upon the land than we usually apply. When the plant is small some concentrated fertilizer is wanted to give the early start so much needed to make a good crop, and in my experience I have found none so economical and successful as superphosphate. It not only gives increased crops, but often saves the entire crop from being ruined by the early frost, ripening about two weeks earlier than corn where it is not applied. It is equally good for potatoes, though not quite as necessary, as the potato does not require as long a season to mature. My gardener uses a portion of it every year, and thinks the garden vegetables would not succeed without it, or at least it adds greatly to their growth.

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LIVE STOCK.

This subject has been freely discussed, not only in sessions of the board but at nearly every public meeting, and in one branch or another — horses, neat cattle or sheep — has created a great degree of interest. We print several of the papers read at diffferent meetings, and, in some cases, brief reports of discussions that followed.

SHEEP BREEDING.

[Remarks of Dr. W. H. H. Mason.]

The first questions for our farmers to decide in relation to this subject are: does wool culture and sheep raising pay as well as the raising of other kinds of stock? and if it does not how can it be made to do so? or if it pays as well, how can it be made to do better?

A few years ago a great *furore* possessed the minds of our wool growers on this subject; fabulous prices were paid for what was denominated "blooded animals." Speculators took advantage of this state of the public feelings; much money was pocketed and many found, when too late, that they had been "wooling and got fleeced." It needs but a glance upon our flocks at the present day to see the effect of the past effort to improve them. A large number have become extinct, while the remainder have essentially deteriorated. It is very clear that the attempts at improvement have been a failure; yet not without leaving us an important lesson for the future, which may repay for all the disadvantages. I shall not take the position that the crossing of sheep or any other stock deteriorates or is without its benefit; on the contrary, I believe they can be essentially improved by it. The fault and

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failure consist in not attending to the process in a proper manner, and by a promiscuous crossing, without regard to the proper species or varieties that should be united. We frequently find herdsmen, in their anxiety and haste to get the different "bloods," mixing in the Leicester, Cotswold, South Downs and Merino with their natives. And after a few years we see their flocks presenting characteristics of each of these varieties with all their bad qualities well developed, while the better are lost. In every case the bad qualities have the advantage, especially when the crossing is promiscuous. In the crossing of sheep we should select from a few varieties only, and we should be governed by the grade of wool we wish to grow. Yet, while there are breeds that can be improved by crossing, there are others that cannot be, and which are more profitably cultivated in their own native state. Such is the case with the Merino and South Downs, the reason of which you will see before I close.

In selecting a species for improvement, especially from foreign countries, care should be taken to get an authentic history of the breed in its nativity. Its health, hardiness and fecundity should be well studied. It is by this neglect that so many diseases have been introduced to our herds. A perfectly healthy animal may transmit the diseases peculiar to its species, so that we must look far beyond the present generation before we risk any new breeds with our flocks; hereditary diseases and peculiar qualities may lie dormant for several generations and then be developed without any loss to its virulence.

In starting the business of sheep raising, we should select our native ewes of the largest size for a basis. The propriety of this is obvious, from the fact that a certain amount of acclimation is necessary to a successful raising of any genus of animals; it is with them as with the human race — every species flourishes best in its own climate. Then arises the question, Can these natives be improved by mixing them with some other blood? This question has been already answered in the negative. Then what is that blood?

This is a question upon which there is great difference of opinion, and this difference is governed much by interest. With us there is no question of interest; being appointed by the state, it is expected that no favoritism be practiced, but that course advised which will be for the best interest of our farmers as a whole. In writing upon this question we are involved in considerable com-

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plication from the fact that in sheep culture we are obliged to take into account the quality of the mutton for market, and also the grade of wool. That of the quality of mutton is easily disposed of, as the *best* suits every one; but that of the grade of wool is not so easily got over. We need, for manufacturing purposes, fine wool and coarse; also different grades for different kinds of fabric. The different grades may be divided into two, the fine wool and coarse, both of which are necessary, and each of which may be made equally profitable. I might also mention a third, which is peculiar for the transverse direction of its fibres (as that from the South Downs) which makes it adapted to the manufacture of flannels or any unfelt cloth.

In considering these two grades we must take the full-blooded Merino for a basis of the fine-wooled and the full-blooded Cotswold for the coarse. There can be no question as to the former, but on that of coarse-wooled animals there may be a question between the Cotswold and Leicester. That each is a good cross for our natives there is no doubt. This may depend much upon location. The Leicester, as cultivated in this country, is a longer limbed and more roving animal. He flourishes best in mountainous pastures, and requires better fenced inclosures (a deterioration from his original habits.) The full-blooded Leicester is objectionable for mutton, by reason of its coarse grain and tendency to accumulation of fat in layers upon the outside; but crossed with the native it makes a very marketable mutton, while its fleece is heavy and commands a good price.

The pure Cotswold is of great antiquity and has stood the test of time with great persistency; and at the present time, in my opinion, ranks first among our coarse-wooled sheep, for health, hardiness and longevity. They surpass the Leicester in quality of mutton. They are very prolific, habitually bearing twins, and are good nurses. While the Leicester lays the fat upon the outside the Cotswold has it well intermixed. Being hardy and robust, the lambs may be dropped early in winter, so as to furnish an early market, commanding the highest prices. The wool from the full blood is objectionable from its great length and thinness, but mixed with our native it is shorter, thicker and very heavy. They are also free from disease. I have never had a disease prevail among my Cotswold sheep. They rank second to none in our markets except the South Downs whose mutton is undoubtedly superior to any other variety; and in its native down pas-

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tures of England is a profitable breed to cultivate. If cultivated at all, it should be in its natural, full-blooded state. It is not a good blood to mix with our natives. In my experience and observation, wherever the experiment has been tried, the flocks have degenerated and run out; it renders the wool of less value by the reversed direction of its fibre, and less profitable by its diminution of weight. It decreases its weight and value, while the Cotswold increases both. Where the profit is expected from the wool alone, it is best to cultivate the pure Merino; in this case it is well to unite the pure American with the French or Spanish. This can hardly be said to be a cross, for they really are the same species, but by uniting or mixing, the American can be materially improved.

It is better to mix the coarse and fine wool in the fleece, where such medium grades are necessary for manufacturing purposes than to attempt to get the grade by crossing the two. When mixed with other species the Merino loses his hardiness and peculiar characteristics and at the same time corrupts the blood with which he is united.

Whenever an attempt is to be made to improve a flock, care should be taken not to breed in. I know this is in conflict with a few writers upon the subject. I can hardly conceive how any one having had any considerable experience in the breeding of stock, can advocate this practice. It will assuredly contaminate the blood, and spoil the beauty and symmetry of the animal. It may be advantageous to practice it occasionally, when the object is to get the blood; but you can never increase the size, health or beauty of the animal by it. If one has a good-blooded flock that he wishes to retain, and finds, by successive crossings, he is losing that blood, he may breed in once in four or five years, for the purpose of checking the drain, providing he cannot get the same blood from any other source. But in doing so he will find the next generation essentially diminished in size and symmetry, though at the next season he may see a decided benefit. The natural tendency of a flock of sheep is to deteriorate. It is very difficult to keep it up to its primary standard; still it can be done, and improvement made if every care is taken. One great cause of deterioration is allowing yearlings to have lambs. They should always be two years old before becoming mothers.

When it is desired to improve a flock by the introduction of a new breed, it should be done by using the male rather than the

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female. A lamb from a native ewe and Cotswold buck will be marked stronger with the Cotswold than by a reversed process. Darwin would call this the result of the law of force. The greater force always overcomes the less. But this is not the only reason why the male should be used to propagate a desired breed. All the bearing females of a flock partake of a certain though very limited amount of the material nature of the male that serves them. This proceeds from the peculiar circulation between the mother and young, *in utero*. The germ of the young partakes of the nature of both mother and sire, both material and dynamical, hence it is easily seen how the mother herself receives a certain amount of the nature of the sire, through the circulation between a female and the young. Not that there is a direct flow of the blood between the two. The cotyledons in the inferior mammalia animals and the placenta or after-birth of the higher order, form the receptacle between the circulating system of the mother and her young, *in utero*. The object of this intermediate receptacle is the decarbonization of the infantile blood. The process is so intimately and intrinsically connected, that the mother necessarily receives a certain materialism from the blood of the young, so that this being impregnated with that of the sire, the mother must partake of a part of the materialism, at least, of the sire. This is illustrated by the copulation of different species producing *hybrids*. The mare after bearing young from the ass, will never after bear a colt without showing a little of the lineaments of the ass, although sired by the best blooded horse. It is a common saying that "it spoils a mare for bearing colts to bear a mule." This can be accounted for upon no physiological principle other than that the mare herself becomes impregnated, to a certain degree, with the blood of the ass, through the circulation between herself and her young during *uterine gestation*. If this explanation be correct (and I have no doubt it is) we can readily see why it is better to use the male in the crossing of animals than the female, not only on the supposition that the greater force always overcomes the less, but because the whole flock to a certain extent gets the blood.

But we should be cautious that we fall into no error in the use of the term "blood," so often used in the discussions of these questions. The term "blooded animals" is well enough, if understood to be used arbitrarily, but if we are to understand by it that the blood itself is the real *sui generis* of the animal, and contains

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the generic attributes of the animal, I should object to the use of the term. In this generic nature we are to go beyond the blood, even before any blood was formed in the ovum, to the germ or ultimate cell. We may transfuse the blood from one animal to another, and such transfusion is not supposed to change the generic character of the one receiving the blood of another. The blood of the sheep has been transfused into the veins of man to save his life, yet, we are not to suppose that he becomes any more *sheepish* or sheep like. The blood is a medium of nutrition, the same as in the circulation of plants. We may grow a number of kinds of apples from the same tree, one may be sweet, another sour, a third bitter, yet one circulation sustains them all; and the difference is traced to the ultimate germ or cell of the scion engrafted. The question then arises how can the mother become impregnated in any degree, however small, with the nature of the sire of her young? It must be brought about through the excretory powers of the maternal portion of the cotyledons or after-birth by extracting certain principles, both material and vital, from the fœtus, through the intricate and inexplicable process by which the mother sustains her young *in utero*, and extracts from it everything prejudicial.

But while we select the male to propagate the breed, we should always choose the female for size. If a farmer wishes to start a flock of sheep, let him obtain a few of the largest sized native ewes and put with them a buck from the breed which he wishes to cultivate. In training a flock, I think it better to keep the natives and thoroughbred equally divided. This can be done by putting a half breed with the flock every few years.

Many farmers (I might perhaps say the most) are in the habit of allowing their bucks to run unchecked with the ewes during their season of heat. This is a grave error and will not fail to ruin any flock. It is necessary that he should be kept in a vigorous condition, which will not be if he is allowed to exhaust himself with the first two or three that he serves. Every ewe should be removed to a separate pen as soon as she has received the buck.

It is a common practice among farmers to use a buck lamb for their sheep. In some towns it is a general practice. Many buy a buck lamb to put with their sheep. Experience ought to convince them of this error. The same rule holds good for both sexes; if a ewe should be two years old before bearing young the buck should be equally as old. It would be better that he should

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be still older. I would prefer one three years old. The sire of whatever animals should become fully developed; he should have arrived at the full status of a perfect animal in bone and muscle, in vigor and strength and in health and spirit. This carelessness and neglect are among the prominent causes of degeneration in our flocks. This is not a mere minor item of error, which matters but little whether corrected or not, but of so much consequence that no sheep grower need expect success for any length of time while in this practice.

It is a common practice to keep a large number in one flock. This is a great source of failure; sheep do not flourish in large flocks; twenty-five is sufficient for one pen. If more are to be kept let them have separate inclosures.

The sheep-pen should be well ventilated. It is better that a door leading to the yard should be constantly open, (except in severe storms) day and night; they will be seen even in very cold weather to lie about the doorway, and even out in the open air. No care need be taken to make the pen warm; unmatched boarding with a tight roof is sufficient.

All old and diseased sheep should be removed to a separate pen, or killed and thrown to the dogs; a farmer cannot afford to keep either with his healthy animals.

If the mother has no milk for the lamb it is not best to attempt to rear it. It will be a disgrace to the flock, and never give a return for the labor and expense of feeding.

The great pest of sheep raising is that loathesome parasite called the "sheep-tick." They must be destroyed or the sheep will not flourish. For the last few years I have practised dipping my lambs in a strong decoction of tobacco at the time of shearing the sheep, giving directions to the shearers to take particular pains that no ticks escape alive on the sheep. I have no more trouble from them until the next winter, when they again make their appearance. I then use fumigations of tobacco, twice during the winter. I use a cast-iron fumigator with a bellows attached, so as to operate easily. I use "Hutchins's improved," and find it to operate well; one pound of tobacco will smoke fifty sheep, and two men will do the work in two hours; the strongest tobacco should be used.

There is a diversity of opinions as to the propriety of washing sheep before shearing. If the washing could be done equally thorough in each and every flock, and the water used of a mod-

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erate temperature, it would be better to wash upon the sheep. Washed wool sells for washed wool, whether it is done well or ill, so that it leaves a wide door for cheat. I have experienced the disadvantages of thorough washing. At one time I used soap in cleansing the wool upon the animal, but got no more for my wool than they who did the work slightly. In many instances the sheep are taken to a cold mountain brook, where the water is poured upon the backs of the animals through a spout. No flock can receive this harsh treatment without more or less injury. If they must be washed, let them be driven to some inland pond, where the water is not so cold. But it is far better, and more equitable to allow them to go unwashed.

Another important question arises in connection with this subject, that is, what is the best time to castrate the lambs? Providing the weather is not too cold, the sooner it is done the better, after the lamb is three days old, always bearing in mind that he must be healthy and vigorous. At this early stage, it is attended with but little suffering, either at the time or subsequent to the operation. It is not only cruel, but absolutely barbarous to allow them to become three or four weeks old, as many do. If performed at this early period, it is better to extract the gland; but if neglected to a later period, excision is the best and most humane manner. When performed by extraction there is no danger of bleeding, but when performed by the other method, it is well to take the precaution to be able to secure the cord by ligature providing the hemorrhage should be in excess.

In regard to the diseases of sheep, I have but little to say from actual experience, never having an epidemic in my flocks, unless a disease of a few days' duration, which I once had among my young lambs, might be called such. I will mention the symptoms here, as I never saw the like before nor since that time. One day I discovered one or two affected with spasmodic drawing of the head backwards, a sort of *aposthotenos*. The head was first dropped, with the nose near the floor, in which position it would remain for four or five minutes, sometimes longer, when the head would begin to rise with short spasmodic jerks, until the back of the head would almost rest upon the spine; it would then fall back to its first position, to go through the same pantomime, after a few minutes' rest. The lamb would nurse as long as he could control his head, and even later, if held to the teat. In a few days I had ten or fifteen affected in the same manner. I found

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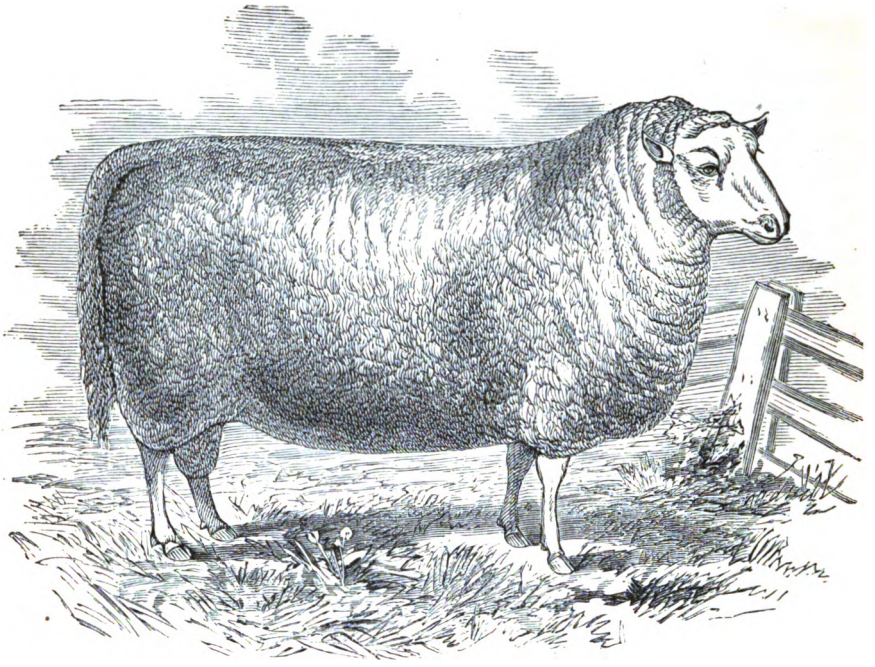
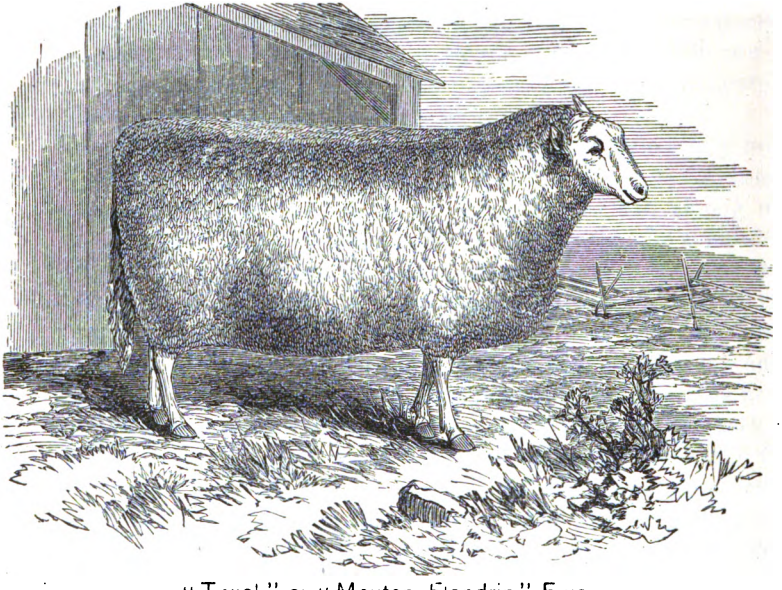


"Texel," or "Mouton Flandrin" Ram,
Imported and owned by WINTHROP W. CHENERY, Belmont, Mass.



"Texel," or "Mouton Flandrin" Ewe,
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something must be done, but was entirely ignorant what that should be. I commenced treatment by giving one tea-spoonful of salts; this had a favorable effect, but did not cure. I then turned my whole flock into the fields, from which the warm days had melted away the greater part of the snow, and from that time I had no further trouble. Not a single case occurred after coming to the ground, while those that were not too far gone by inanition, soon recovered. I lost three or four. The ground was a complete remedy. I never saw this affection mentioned in any treatise upon sheep raising, and never having seen or heard of it, I was much interested in the result. I think the spasmodic action of the head was caused by a reflexed action upon the spinal marrow, from the mucous membranes of the stomach and bowels; and the primary cause must have been some impure vapors from the pen, although some had the disease that had been removed to new pens; but it might have been contracted before the removal. In all such or similar cases I would advise the early removal to the ground, or, if this cannot be done, clear out the pens and throw in earth. There are several elaborate treatises upon the malignant diseases of sheep, to which I would refer, as very much more reliable than any thing I may say. They who have had these diseases to treat are much better qualified to give advice than they who have had no experience in them. Old flocks, however free from malignant diseases, are liable to sporadic cases of sickness, especially during the winter months, such as colic, cold stretches, colds, coughs and catarrh. There are a few remedies peculiarly adapted to the accidental cases so incident to sheep raising. These are thoroughwort, Epsom salts, and one teaspoonful each of powdered rhubarb, saleratus and ginger. The thoroughwort is adapted to the colds and catarrh of sheep. One-half pint of the decoction, given warm, is a proper dose; the rhubarb, saleratus, and ginger are prescribed in all affections of disturbed digestion, or common ailment, while the salts are suited to all cases of febrile excitement. The dose of salts is from one-half to two-thirds of a teacupful, administered in liquid, from a suitable bottle. Too much dosing must be strictly avoided. This is a fault common to all herdsmen. I have no doubt, in the empirical treatment of animals, that much harm is done; I think I may say more harm than benefit. The poor dumb creatures are forced to swallow all sorts of nostrums in rapid succession, diversified, according to the number of accidental visitors, who are always ready to volunteer

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an opinion of what is a sure remedy, which practice is persistently pursued, until, between disease and quackery, they finally succumb. The recuperative power of nature is so great that the majority of cases will recover if let alone, and it is much better to leave them to the hands of nature, than to drug them ignorantly.

Much has been said among farmers about the maggot in the brain, and many deaths are attributed to this as a cause. I think this is an error. The maggot is a larva deposited in the nasal cavities of the sheep, during the months of July and August, by a fly, which subsequently becomes developed into a worm, causing discharges from the nostrils, and sneezing. After the worm comes to maturity, it is thrown off, and the irritation ceases. There is nothing in the construction of the worm that could render it possible for him to bore his way through the bones of the head to the brain. Yet many will tell you they have seen the worm in the brain by examination after death, and nothing will convince them of their mistake. These *post mortem* examinations are not usually done in a very scientific manner. The instrument used is frequently a dull axe, which opens the head by successive blows, scattering the brains and worms from the upper part of the nostrils promiscuously together, giving rise to the belief that they existed together. The best preventive for this troublesome parasite is to apply tar around the nose during these months, or put tar into a trough and throw upon it salt. In their attempt to get the salt, they make their own application of the remedy.

I would say that you should always have regard to the easy parturition of your sheep. At the lambing season they are apt to become weakened, especially if neglected during the winter, and a hard parturition imperils both the mother and lamb. This mischievous drawback to success may be prevented by selecting for breeding both parents with small heads. Whenever an animal shows a head proportionably larger than the rest of his body he should be sent to the butcher. Sell the large-headed lambs, keep the small-headed ones for breeders. A sheep with a small head and a capacious chest filled with healthy lungs, with a fair development of other parts of the body, carries his own recommendation, and from whatever species, varieties or family he may come, will not fail in hardiness, health and productiveness.

But after all has been said in relation to the different breeds, or whatever else relates to the animal, nothing takes the place of

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proper care and good feeding. There are but few varieties that will not flourish by good feeding. Many practice giving their poorest hay to their sheep; this is a very bad practice unless they are grained or fed with roots. A farmer cannot afford to keep any animal poorly. It is destructive to his best interest. No animal kept lean will make a good return in profit to its owner. If there is any partiality to be used among his different animals, let it be in favor of his sheep.

Finally, I will say a few words in relation to the best manner of obtaining our blooded animals, and conclude. It is difference in climate and difference in pasturage that make the different varieties of animals. It is supposed there were originally but a few species of sheep, so that the different breeds are only so many varieties of the same species, though the pure Merino may be distinct. In the importation of different breeds it cannot be expected that the animal will flourish as well as in its natural pastures. Acclimation must be overcome, which sometimes takes a long while, even through several generations. This is no doubt one great cause of the disappointments that have occurred in attempts at improvements.

We have but few pastures in this state like the dry and sandy downs of England, where the South Downs flourish so well. If you bring that breed into the pastures of New Hampshire without acclimation it will surely deteriorate. I would not select a recently imported animal from which I would improve my stock, but rather one that had been produced after several years of acclimation. If a breed has become acclimated and seems to flourish in our climate and by our feeding, it is far better for us to select our blood animals from them, than to import new. In other words, it is better to purchase of those who have cultivated the breed in our own country, and the nearer to our own pastures we can obtain them the better.

Considering the well-established fact that climate has much (if not the most) influence in producing the varieties of animals, we cannot conclude that any recently imported, though they may to outward appearance be very desirable as to size or any other quality, will flourish with us. We must go further than the appearance of the animal. His adaptation to our climate must be considered. Did he come from the same latitude? Was he subject to the same meteorological influences? Did he graze in the same kind of pastures? I am not in favor of the extensive importation

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of animals. It may be well if done with great care, and one is willing to wait for acclimation. By it many malignant diseases are introduced. These rarely originate with our natives. For a general practice I think it is better to select carefully from our own well acclimated animals, and that much time or money expended in the procuring of many breeds or varieties is worse than lost. Improve your own by selecting out your breeders, and then if you can see a place where you are confident of success cross the breed, though it may be from a recently imported animal.

When we see an animal placed in our shows beautiful to look upon, large and symmetrical, we at once have a desire to introduce him to our stock; the thought of his incompatibility to our soil and climate does not occur. We see him in his native beauty. If you place him in our pastures and with our cattle there are more than even chances that his progeny will be inferior to our own inferior animals.

Finally, let the farmers not be discouraged at any ill success in this branch of their business. It certainly has been attended with discouragements, but with proper care and perseverance (which is necessary for the success of any enterprise) it may be made profitable, in my opinion, as much, if not more so, than the raising of any other stock. It is attended with a sort of semi-annual income. It brings its returns often, and when successful, bountifully.

BREEDS OF CATTLE.

[Address of O. F. R. Waite of Claremont.]

Reckoning from the time of the flood, the native country of the ox was the plains of Ararat, and he was a domesticated animal when he issued from the ark. He was necessary for the existence of man, and wherever the sons of Noah migrated there he was found; and from that time to the present wherever man is there the ox may be seen in either a domesticated or wild state. When Abraham was in Egypt, one hundred and eighty years before there is any mention of the horse, Pharaoh presented him with sheep and oxen. The early domestication and value of this animal is acknowledged in its worship by the Egyptians, and the veneration in which it was held by the Indians. The Indian legends say

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that it was the first animal that was created by the three kings of the gods, who were directed by the supreme Lord to furnish the earth with animated beings. The traditions of every Celtic nation enrol the cow among the earliest productions, and represent it as a kind of divinity.

By the earliest and most authentic accounts, we learn that the Britons possessed great numbers of cattle; that they neglected the plow and lived on the flesh and the milk of these animals. Hence it will be seen that the fondness for beef on account of which Englishmen have been ridiculed, was inherited from ancestors of very remote date.

Cattle, like most other animals, are the creatures of education and circumstances. They are educated to give us milk, acquire flesh, to draw our carts and plow our lands. In Southern Africa the ox is educated to such a degree as to show intelligence superior to the horse, and equal almost to the dog, the most sagacious of all animals. Among the Hottentots these animals are their domestics, and the companions of their fatigues and pleasures; they are both the protectors and servants of the Caffre, and assist him in attending his flocks and guarding them against invaders. Every army of Hottentots has attached to it a herd of these creatures, which are let loose against the enemy, and overturn all before them; they strike down with their horns, and trample with their feet every one who attempts to oppose them, and thus often procure their masters an easy victory, before they have begun to strike a blow.

The love of distinction is a remarkable characteristic in the dull and apathetic ox tribe. To illustrate this trait a curious fact is mentioned by David Low, Professor of Agriculture in the University of Edinburgh, in his work on the "Domestic Animals of the British Islands." In the mountains of Switzerland, where a beautiful race of cows is reared, it is the practice to attach bells to the most trusty of the cows, that the sound may keep the herd together, and direct the herdsmen to the place where they are pasturing. These cows are the pride of the cow-keeper. He has various sets of bells, and on certain occasions the favorite cow has the finest and largest bell and the gayest trappings assigned to her; the others have inferior bells, and less ornamental collars, in a gradation downwards to those to which no distinction is awarded. To deprive the cows of their wonted ornaments is to inflict upon them a punishment which they grievously feel, manifesting their

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sense of humiliation by piteous lowings. On gala days a kind of procession takes place; the herdsman is in the van, and next in order comes the favorite cow, leading the herd, ornamented with her tinkling bells and gay apparel. Should another, from any cause, be made to take her place, she manifests her vexation by continual lowing, abstains from food, and attacks with fury the rival that has gained her honors. A certain cow, Monsieur Latrobe informs us, who had long borne the badge of distinction, had just given birth to a calf, and was reckoned too feeble to bear her usual part in the honors of the day, and even the ordinary bell was thought to be too heavy for her. The procession moved on, but the poor cow that had been stripped of her accustomed honors, did not share in the general joy; after a few steps she faltered in her pace; the attendant tried to coax her on, but in vain; she stopped, and at length lay down as if to die. An old herdsman soon divined the cause; he brought from the house a bell and collar, such as she had been used to bear; she no sooner felt the well-known appendage at her neck than she rose from the ground, bounded gaily, as if in possession of her usual health, and taking her place in the van, was from that moment as well as ever.

Such is the creature which reason, conscience and interest teach us to treat with humanity and justice, instead of neglect and wanton cruelty.

The importance of the subject of neat cattle will be better understood when we say that according to the census of 1860, there were in the United States and its territories, eight millions, seven hundred and twenty-eight thousand, eight hundred and sixty-two cows; two millions, two hundred and forty thousand, six hundred and seventy-five working oxen; fourteen millions, six hundred and seventy-one thousand, four hundred other cattle, making a total of twenty-five millons, six hundred and forty thousand nine hundred and thirty-seven. Estimated at $38 per head, would make their total value nine hundred and seventy-four millions, three hundred and fifty-five thousand, six hundred and six. In New Hampshire alone, according to the inventory of 1868, there were one hundred and eighty thousand six hundred and sixty-six neat cattle, which at the same valuation of $38 per head would amount to $6,865,308.

Cattle, when first taken from their wild state, are of but little value, compared with those which have had years of domestication, good care and abundant food. By these means they become

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greatly and permanently changed in habits, color, form, size and disposition, and we have a race of much value and importance. In this country we have no distinctive breeds, as in England, Scotland and Ireland. Our native cattle are susceptible of great changes and improvements by judicious crossing with foreign thoroughbreds, and greater care and attention on the part of breeders. Our own native cattle may be greatly improved by the breeders' art, if the best animals are for a succession of years selected for breeding purposes, instead of trusting to chance, or taking those animals, as many do, that are past their usefulness for anything else.

The term *breed*, properly and fully understood, applies only to animals of the same species, possessing, besides the general characteristics of that species, other characteristics peculiar to themselves, which they owe to the influence of soil, climate, nourishment and habits of life to which they are subjected, and which they are capable of transmitting with certainty to their progeny. The characteristics of certain breeds or families are so well marked that if an individual supposed to belong to any one of them were to produce an offspring not possessing them, or possessing them only in part, with others not belonging to the breed, it would be good ground for suspecting a want of purity of blood.

The breeding of cattle pursued upon well established principles, and by definite rules, adds character, importance and wealth to a nation. Charles and Robert Colling devoted many years to the breeding of cattle, and the result was the Improved Short Horns — a breed more valuable for the climate and country where bred than any that had been known before them. Charles Colling bred the famous bull, Comet, and sold him for one thousand guineas. This and other equally distinct breeds made England famous all over the world, for her throughbred neat cattle, and she has been enabled to export thousands of animals annually, at almost fabulous prices, to propagate their kinds in other countries.

The proper breeding, care and arrangement of farm stock are of vast importance to the country. Those farmers who make stock a specialty are giving to these subjects much reflection and study. In England the breeding of neat cattle is regarded as a science, and gentlemen have brought to it years of experience and much skill.

It must be safely laid down as a fundamental rule in the breeding of stock, that *like produces like.* Although this rule can only

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hold in a general and not in a positive or particular sense, it is one that has been followed in the improvement of all domestic animals. If the breeder wishes to perpetuate and increase any special property, he should select for propagation those animals in which that property is manifested in the highest degree compatible with health and constitution. It is this principle which has constituted the improvement of the ox tribe in reference to beef, labor and for milk; in sheep, for fineness and other qualities of wool, or for mutton; in the horse, both as to speed and for draft.

Certain properties in animals are antagonistic. For instance, in the horse speed is obtained at the sacrifice of power. The property of acquiring flesh in cattle is more or less opposed to the secretion of milk, and the external characteristics which denote the adaptation of the animal to the one purpose, do not denote his fitness for the others. The fattening animal should possess as much as possible a rotundity of form, with great breadth and capacity of chest, and a pretty even balance of weight in the fore and hind quarters. These facts are well known to most cattle breeders, and may be to some extent explained on physiological principles.

The attempt has often been made by inexperienced breeders to unite all the desirable qualities in the same animal, and breeds for which the first rank is claimed as fattening stock, are also recommended as superior dairy stock. It has been already demonstrated, however, that all the good qualities cannot be obtained in their greatest degree, in the same animal. Some may wish to breed stock for all purposes, but if they attempt it they will have all the good qualities in moderate degree. The breeder may very easily increase the size of the Devon ox or Morgan horse, but whenever he increases the size he will not have the Devon ox or Morgan horse. What he has gained in size he has probably lost in symmetry, compactness, ease of motion and vigor.

It is said by the best writers, and is probably true in the animal as well as in the vegetable kingdom, that every departure from the medium size of a race of animals, is attained by some loss of power, or at least that the medium size of a race should not be departed from, except to raise animals for special purposes. The draft horse for heavy weights should be heavy, but he will be slow, and will not have ease and grace of motion, nor will he have the iron hardihood and endurance of the medium-sized horse.

In raising cattle it is of the utmost importance to select breeds adapted to the soil, climate, and other conditions of the country

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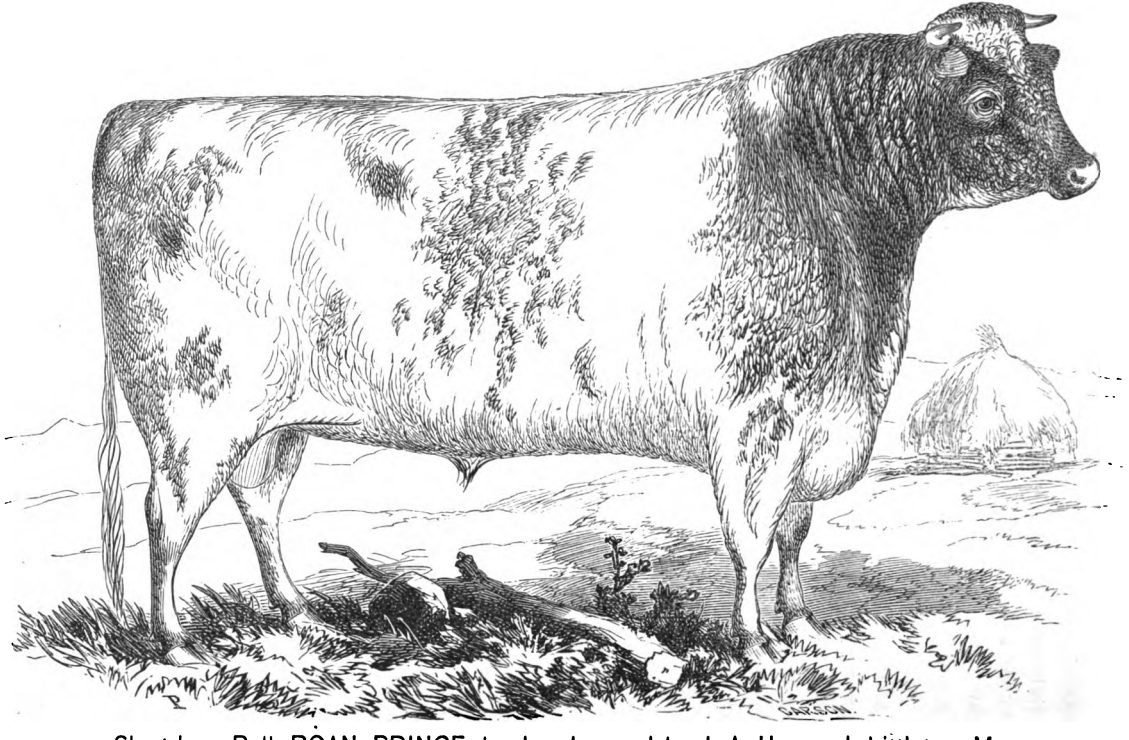

Short-horn Bull, ROAN PRINCE, bred and owned by J. A. Harwood, Littleton, Mass.

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where they are to be taken, and to avoid moving them from one extreme to the other. We have it from William Youatt, whose books upon domestic animals have met with the very general favor of cattle breeders in this country and in Europe, that the North Highland cattle of the Shetland Islands are very small, dwarfish, ill-shaped, and covered with long, shaggy hair, and sometimes not weighing more than thirty-five or forty pounds to the quarter. When taken from the cold climate of their native islands, where there are few or no grasses or green crops, and nothing but moss, heath, and sea weeds for them to subsist upon, to the comparatively richer pastures of the north of Scotland, they thrive with incredible rapidity and fatten on very poor food in a very short time; and their fat being so quickly and newly laid on is said to be peculiarly tender and delicious, and they often run to sixty-five or seventy pounds to the quarter. When taken further to the south, and to even more luxurious pastures, the change is too great for them, and they languish and sicken.

The breeder must have a clear and distinct idea of what he wants to breed, and this should be determined by the soil on which his animals are to be reared, the climate they are to inhabit, and the use to which they are to be put. The skillful breeder, who pursues his object by the highest rules of art, must thoroughly consider and decide on the result to which he wishes to attain. For instance, the Durham, so admirable for the butcher's stall and so well adapted to the luxuriant pastures of Kentucky and the prairies of the west, would probably find the rugged and scanty pastures of many parts of New England insufficient to develop his rapid growth, when the same pastures would easily sustain the lighter, more agile and hardy Devon. Because a breed of animals is adapted to and profitable in our locality, it does not therefore follow that it will succeed equally well in other places, with different soil and climate.

Undoubtedly, a valuable breed of cattle for our particular locality could be more easily and cheaply obtained by introducing some of the foreign thoroughbred stock, and breeding from it, than by the slow and tedious process of improving our own. But there is great diversity of opinion, even among intelligent and well informed breeders, as to what breed of foreign thoroughbreds is best adapted to our New England soil and climate, and great mistakes are likely to follow the enterprise. Some have bred the Ayrshires successfully, but the result has been more generally satisfactory

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when they have been crossed with some of our best natives. The Ayrshires are famous throughout Great Britain for their milking qualities, which they justly merit. There are many conflicting opinions regarding the origin of this breed, but it is most generally believed that is the result of *accident* rather than design on the part of any breeder. It was first known in the Cunningham district, Scotland. It is held by some that it is the result of a fortunate cross, or a succession of crosses, many years since, of the small natives with the Short Horn Teeswater breed, which from all accounts seems quite probable.

In many other parts of Scotland, says Youatt, the attempt to introduce the Teeswater breed, or to establish a cross from it, had palpably failed, for the soil and climate suited only the hardihood of the Highlander; but here in Ayrshire was a mild climate, a dairy country; the Highlander was in a manner out of place; he had degenerated, and the milking properties of the Teeswater and capacity of ultimately fattening, amalgamated with his hardihood and disposition to fatten, and there resulted a breed bearing the stamp of its progenitors, and to a very considerable degree the good qualities of both.

All that is positively known is that a century ago there was no such breed in Scotland. Some contend that it is the result of a careful selection of the best of the native breeds—but this is not generally believed, and for very satisfactory reasons. James Dickson, a distinguished Scotch writer, says: "They are apparently quite distinct from all other Scotch breeds, and, although existing pure in the west of Scotland, generally, the best type is to be found in the Cunningham district. In color they are generally red and white, but the best are spotted; horns, short; head, fine and tapering; neck, thin; chins, narrow; in general the backs and hooks, narrow; ribs, rather flat; hair, generally thin and transparent; hide, soft. Altogether they have light carcasses, with light fore ends, which is generally a true index of good milkers. That they are good dairy cows cannot be denied; but they are not considered profitable stock for feeding purposes, as they want the symmetry, substance and aptitude to fatten possessed by the Short Horn, Galloway, and many other breeds."

Youatt says: "The fattening properties of the Ayrshire cattle we believe to be exaggerated. They will feed kindly and profitably, and their meat will be good. They will fatten on farms and in districts where others could not, except supported by artificial

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food. They unite, perhaps, to a greater degree than any other breed, the supposed incompatible properties of yielding a great deal of milk and beef. It is, however, on the inferior soil and the moist climate of Ayrshire and the west of Scotland, that their superiority as milkers is most remarkable. On their natural food of poor quality they give milk abundantly and long, and often until within a few days of calving; but when they are moved to richer pastures, their constitution changes, and they convert their food more into beef. · In their own country, a cow of a fleshy make, and which seldom proves a good milker, may be easily raised to forty or fifty stones — five hundred and sixty or seven hundred pounds — and bullocks of three years old are brought to weigh from fifty to sixty stones — seven hundred or eight hundred and forty pounds. There is a lurking tendency about them to fatten, which good pastures will bring forth; so that when the Ayrshire cow is sent to England, she loses her superiority as a milker, and begins to accumulate flesh."

Since our farmers generally breed for all purposes, a cross of the Ayrshire with our own natives would be more likely to produce stock better adapted to the wants of New England than is the thoroughbred Ayrshire. The oxen of this breed are not rated as superior to those of other breeds, either for strength, activity or docility, all of which qualities are important in working cattle.

In England the art of breeding cattle has been carried to great perfection, and some breeds are traced back nearly a hundred years. There are seven distinctive leading breeds, which are generally ranked in that country — Improved Short Horn, Long Horn or Lancashire, Hereford, Devon, Sussex, Suffolk and Welsh. This order of rank for good qualities is by no means universal, there being much controversy among breeders as to the position which each should occupy. With this, however, soil, climate and circumstances have much to do.

Probably no breed has been carried to such a degree of perfection as the Improved Short Horned. A Herd Book is periodically published containing the pedigrees of all pure-bred animals of this class. Mr. Dickson, in his book on "English Cattle," says: "No breeder of the present day need attempt to sell young bulls unless the pedigrees of the sire and dam are recorded in the Herd Book."

By some breeders in New England Devon stock is highly prized; and, judging from their leading characteristics, and from the country of their nativity, they may be introduced and bred

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pure here with profit. In a climate congenial to them — and this principle must not be lost sight of when considering any of the different breeds — they mature at an early age, fatten kindly, and make fine beef. Youatt says that in their disposition to fatten, very few rival them. They do not, indeed, attain the great weight of some breeds; but in a given time they acquire more flesh, and with less consumption of food, and their flesh is beautiful in its kind. The cows yield a less quantity of milk than those of some other breeds, but it is of excellent quality, and produces more than an average proportion of cream and butter, and some select in preference to other breeds for the dairy, though they are not generally regarded as the best. One of the chief recommendations of this breed is the superiority of its oxen as workers. Youatt says: "They have a quickness of action which no other breed can equal, and very few horses exceed. They have a docility and goodness of temper, and stoutness and honesty of work, to which many horses cannot pretend."

In Holland dairy farming has for many years been a very important branch of husbandry, and great care has been bestowed upon the selection and breeding of dairy stock. Cattle known as the Dutch breed have been imported into this country from Holland by several gentlemen, who claim for them superiority as dairy, fattening and working stock, over most other foreign breeds, and that they cross well with our own native cattle. The Ayrshire breed is said to have been derived, in part at least, from animals imported into Cunningham districts from Holland. Mr. Rawlin, writing of these cattle in 1794, says that they "are allowed to be the best race for yield of milk in Great Britain or Ireland, not only for large quantities, but also for richness and quality."

The first importation of Dutch cattle into this country was made by the Dutch West India Company in 1625. Subsequently importations were made by the early Dutch settlers of the state of New York. More recently, in the year 1810, the late Hon. William Jarvis of Weathersfield, Vt., brought from Holland a bull and two cows, which were placed upon his farm. These cattle soon acquired an enviable local reputation, which has been maintained down to the present time, for all the qualities desirable for an American farmer. They were kept pure for many years, but it is doubtful if any can be found at the present day, though the stock on many farms in that vicinity was greatly improved by

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crossing with them, and traces of the blood can be easily distinguished wherever it exists, though in remote degree.

The Alderney, or Jersey cattle, have been imported into this country from their native islands in the British Channel, and are celebrated for the richness and butter producing qualities of their milk. They yield but a small quantity in comparison with the amount of food consumed, but it is very rich and delicious. The animals are small and not valued as fattening or working stock. The Alderney must be regarded as almost exclusively a dairy breed, but not profitable for general purposes.

It is hardly necessary to allude to other foreign breeds, each of which has its friends, admirers and advocates.

The first object of every farmer should be the improvement of his stock of cattle. This may be done by carefully selecting and breeding from his best, successively; or what is more sure and easy, by crossing the best of his own stock with some pure bred stock possessing, in an eminent degree, the qualities he would secure. For this purpose, as before remarked, the breeder should have a definite idea of the improvements he wishes to make, and then steadily pursue his object. If he would improve his cows for dairy purposes, he will first procure a bull of some thoroughbred milking stock, and one of the best of his kind, possessing in an eminent degree the characteristics of his best ancestors. He will then select such heifers from his own stock as possess, and whose ancestors possessed, the qualities he desires, and cross them with the thoroughbred bull. In this way the progeny will, without an exception, be better than his original stock, because the characteristics of the bull will greatly predominate, since his have been well established by breeding from the best stock for generations, while the heifers have really no well established and settled traits of character. He has the advantage of the good qualities of the heifers selected from his own stock, mixed largely with the pure blood of the bull he crosses with them. From these half bloods the best, or those possessing in the greatest degree the qualities he desires, should be again selected and crossed with another good bull of the same pure blood of the first. After the first cross, the breeder should return again to the original thoroughbred stock, and so continue until the herd is brought to the degree of perfection aimed at in the start. If this course is steadily pursued, a few years will produce a herd of great value for the purpose for which it is bred.

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When one dung-hill is bred to another, no one can foretell what the progeny will be. It may take back and be entirely unlike either parent, in form, color, description, etc. Such, however, is not the case when one or both of the parents are well bred. If you cross two well bred animals, you can tell what the progeny will be with a great degree of certainty. When the parents are both of the same pure breed,—on the principle that "like produces like"—the progeny will possess the same form, color, disposition and traits of character that have for a long time marked its ancestry.

No farmer can afford to breed from inferior animals of any kind, or from good ones in an improper way. And although he may follow the well established rules of breeding or crossing, his animals will not be superior unless they are given proper food, care and attention. If the dam is poorly fed and cared for while carrying her young, the progeny will be a starveling, and its life will not be long enough to erase from it the evidence of the ill treatment or neglect of the parent.

It is of great importance that the animals selected for breeding purposes, on both sides, should be sound and healthy, free from structural defects and disease, or predisposition to disease, as both defects and diseases appear to be more easily transmissible than desirable qualities. Indeed, Youatt says: "There is scarcely a malady to which the horse is subject, that is not hereditary. Contracted feet, curb, spavin, roaring, thick wind, blindness, notoriously descend from the sire or dam to the foal." Cattle being less exposed to the existing causes of disease, are not subject to so many of them, and what they have are less violent than in the horse, but they are equally transmissible, and should be avoided with the same care by the breeder.

The extent to which structural defects, diseases, habits and dispositions are transmissible in the human species as well as the brute creation, is almost incredible to those whose attention has not been called particularly to the subject. In the human race this is exemplified in a marked degree in the Jews and gypsies. S. L. Goodale, Secretary of the Maine Board of Agriculture, in a little book on the principles of breeding, says: "The Jews, although exposed for centuries to the modifying influences of diverse climates, to association with people of widely different customs and habits, they never merge their peculiarities in those of any people with whom they dwell, but continue distinct. They retain

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the same features, the same manners, customs and habits. The Jew in Poland, in Austria, in London, or in New York, is the same; and the money changers of the Temple at Jerusalem, in the time of our Lord, may be seen to-day on change in many of the larger marts of trade. How is this? Just because the Jew is a thoroughbred. There is no inter-marriage with the Gentile, no crossing, no mingling of his organization with that of another. When this ensues 'permanence of race' will cease and give place to variations of any or all sorts."

Pritchard, in his "Natural History of Man," says that the horses bred on the table lands of the Cordilleries are carefully taught a peculiar pace, which is a sort of running amble, and after a few generations this pace becomes a natural one; young, untrained horses adopting it without compulsion.

T. A. Knight, in a paper read before the Royal Society, says: "The hereditary propensities of the offspring of Norwegian ponies, whether full or half bred, are very singular. Their ancestors have been in the habit of obeying the voice of their riders, and not the bridle; and horse-breakers complain that it is impossible to produce this last habit in the young colt. They are, however, exceedingly docile and obedient when they understand the commands of their masters.

I have occupied the full time allotted me, and have but very imperfectly touched upon a few points that seem to me essential to be observed in the selection of breeds, and the breeding and management of neat cattle, which contribute so considerably to the success of a large share of our New England farmers.

NEAT STOCK FOR NEW HAMPSHIRE.

[Address by Hiram R. Roberts of Rollinsford.]

It is an interesting consideration that the annual income of neat cattle in the United States amounts to $600,000,000. There are not less than ten distinct breeds of cattle in Europe, and nearly, or quite all of them have been introduced into this country, viz: the Devons, Herefords, Long Horns, West Highlands, Galloways, Ayrshires, Short Horns, Holstein or Dutch, Spanish and Channel Islands cattle, including Alderneys, Jerseys and Geurnseys. We

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now have in this state three hundred thousand cattle, producing a yearly revenue of more than $6,000,000; and when we examine the fact, that within twenty-five years a great change has taken place, and is still going on, in the uses to which cattle are applied, the subject assumes an importance which should receive our most careful consideration. In England, Scotland, Germany and nearly all of the European States, for a long time, and especially during the last half century, improved breeds of cattle have called forth the best agricultural talent, and vast sums of money have been expended on this object. But in this country prior to 1817, scarcely any attention was paid to this matter, and from that period to 1852, when some spirited companies in Ohio and Kentucky made quite extensive importations of Short Horns, but little attention was paid to blood cattle, except in isolated cases, and the public attention was not at all aroused to the importance of the project. Since then stock breeding has constantly increased in importance, so that at the present time there is a very general inquiry into the merits of the different breeds of cattle.

"Cattle were imported into this state in 1631, '32 and '33 by Capt. John Mason from Denmark to supply the Danish emigrants who had settled on the Piscataqua river." "These cattle were coarse, large animals of a yellowish color;" and I infer that they made good milkers from the fact that this color, in native cows, has always been held in high repute by dairymen: and from this time down to the present, importations from Europe have been made of the various races of cattle there, and so commingled and mixed up that native or grade cattle may mean a very good, ordinary or decidedly bad animal, of any size, form or color. That these grades of cattle have produced fine animals, both of the ox and the cow, admits of no dispute. "But the uncertainty of these cows producing an offspring equally meritorious, has been an utter bar to establishing a race, from among themselves, of even standard value for the dairy." "It is a mere chance medley affair altogether." One of the chief defects of these common cattle, is their lack of early maturity.

Amongst the earliest pure breeds of cattle imported into this country was probably the Devons; for oxen of this color, build, form of horns and motion, have been held in high repute by teamsters ever since oxen were used for labor here. "The origin

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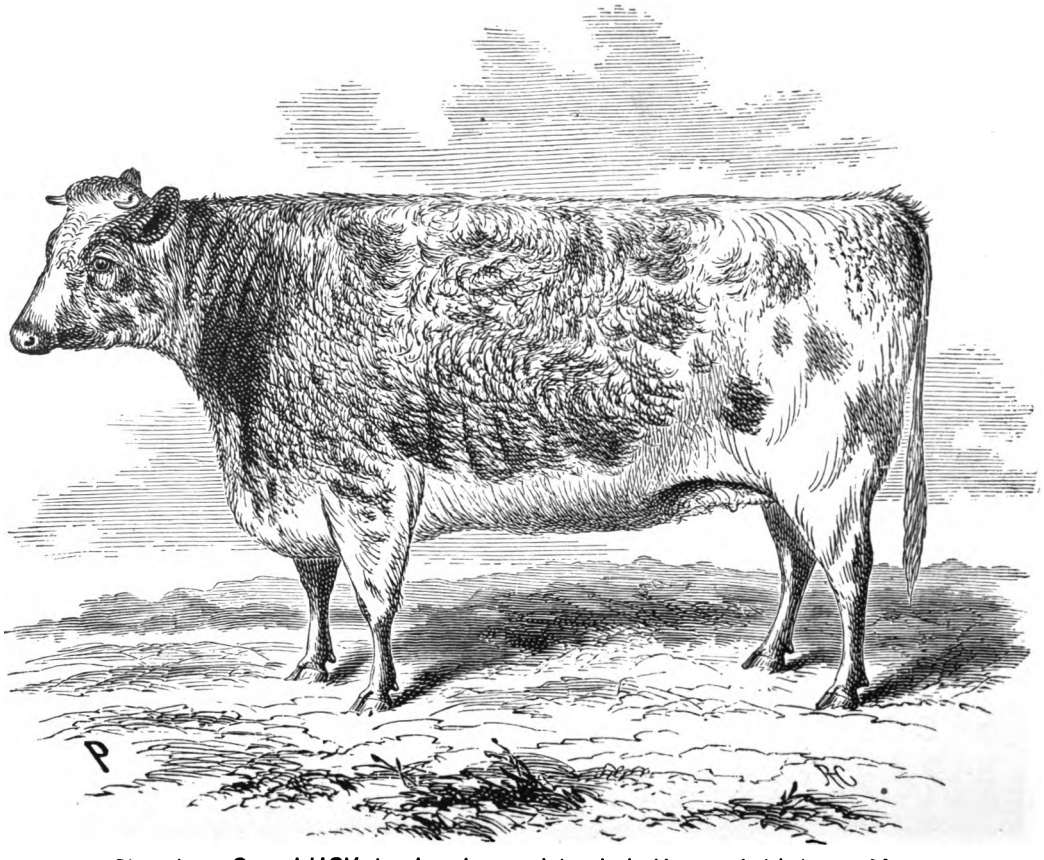

Short-horn Cow, LUCY, bred and owned by J. A. Harwood, Littleton, Mass.

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of these cattle dates very far back. Some claim that they were known in England at the time of its invasion by the Romans; but be this as it may, they are certainly the oldest known race of cattle in the British Empire, and their blood has been kept purer and more distinct than any other race. They are decided favorites in England on hilly soils, where their compact forms and active habits fit them both for grazing and work. Their size is an objection to persons who wish to raise large animals, but in the Southern States, the Devon is often preferred to any other breed. They have few equals for work, good at the pail, and full medium for the shambles, and in my opinion have no superiors when labor on the farm and teaming on the road are performed by oxen, and when grazing requires activity to supply the wants of the animal.

The Alderney, Jersey, Guernsey, or Channel Islands cattle, are all one breed, though they are often designated as different races. They are usually known in this state as Jerseys. The cows of this breed have obtained quite a notoriety in many sections of the country, and are commanding high prices. "This breed are natives of Normandy in the northern part of France. Natives of a milder climate than ours, they are more delicate in constitution and require good shelter and food," and must be handled kindly and carefully. They give very rich milk and make superior butter. Still this breed does not work its way to any considerable extent into public favor. Youatt, the celebrated English writer on cattle, does not devote quite two pages to this breed. Flint, in his work on Milch Cows, says "the most common decision prevailing among many, even of the best judges of stock, seems to be that however desirable the cows may be for the lawn, or the gentleman's park, they are wholly unsuited to the general use of the practical farmer," and Allen, the most celebrated writer on neat cattle in this country, says "she is simply a milking cow, and for nothing else should the race ever be bred." There is no necessity for telling a story of large quantities of either milk or butter being produced by an Alderney. They were never made for great yields of anything.

AYRSHIRES.

This breed were imported into this country about thirty-eight years ago, and they have met with a fair share of public favor. It is admitted by the best authors that this breed is indebted to

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the Short Horns, on one side, at least, for its symmetry of form and good milking qualities; and that a cross of a small sized Short Horn bull, with a native cow, would produce a stock much resembling them. The Ayrshire cow as a milking cow on ordinary keep has no superior. It is claimed by the advocates of this breed that they will give a larger return of milk for the food consumed, than crosses of any other breed. It is not a favorite with the butcher, as the fifth quarter does not weigh well, and as oxen they are but medium.

DUTCH OR HOLSTEIN.

This breed of cattle, which are creating some little stir in the New England states, were imported into this country as early as 1825, but have not yet spread abroad to any considerable extent. Mr. Chenery, who imported some fine specimens of this breed in 1852, '57 and '59, has been the most successful propagator of this race of any who has taken hold of it yet. Allen says "the dairy qualities of the Holstein must be acknowledged as remarkable. The Short Horns, as in many instances of trial, have heretofore acknowledged no superior; yet they have now, in these new strangers to our soil, to say the least, found most formidable competitors, and an opportunity is here offered, by those who cultivate them for the dairy, to test their long acknowledged good qualities by comparison." Great care has been taken by the Dutch in cultivating the milking qualities of this breed, especially for cheese-making purposes.

The color of the Holsteins, jet black, spotted with pure white with a skin of the same color, is not indicative of rich milk, and I entertain serious doubts about the superiority of their milk for butter making. As beef animals and working oxen, I know nothing; and can learn but little from any American authors which I have consulted, but see no good reason why they may not be fair for both.

The Holsteins are a large breed of cattle, but in symmetry of form and general appearance, they do not strike the cultivated eye of the admirer of the bovine race with that force that the Short Horns do.

SHORT HORNS.

Great attention has been given to the perfection of this distinguished breed in England, and far greater numbers of them have been imported into this country, north of the Potomac,

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than of any other race of cattle; and more of them are now to be found in this section of the United States than of all other blood cattle put together. Wherever good keep is found, there these cattle are sure to find their way.

AS A MILK COW.

"In quantity of milk this breed has no equal, with, perhaps, the exception of the Dutch." They have been known to give as high as thirty-six quarts of milk per day on grass alone, and to hold their milk as well as other breeds; and none exceed them in gentleness. The result that I have come to, after twenty-five years' experience on a milk farm, and from extensive inquiries and long observation, is this: That the net income of a milch cow to be turned for beef in the end is greater in good milking families of this breed, or from crosses in which the Short Horns largely predominate, than in any other race of cattle that has come under my notice. For the large London dairies, some of which contain nearly one thousand cows apiece, after thoroughly testing the matter, the Short Horns are selected, or Short Horn and Yorkshire grades, in preference to all others.

WORKING OXEN.

The Short Horns are not as great walkers and so great favorites with teamsters as the Herefords and the Devons, but they are very tractable, kind and strong, and for heavy work they are by no means inferior animals. A cross of this breed with the natives makes fine working oxen.

BEEF ANIMALS.

Allen says: "It is held as a flesh producing animal; that in early maturity, weight of meat, ripeness of points, and giving the most flesh in the best places, the great merit of the Short Horns is found; that the Short Horns at three years past, well fatted, is as fit for slaughter as the native at five or six years." In the Western states, where the Short Horns or crosses from them extensively prevail, a very large proportion of beef brought to market is steers of three or four years of age; and in the market quotations of beef-cattle, steers of this age take the lead, while in this state, when native or grade cattle prevail, steers are seldom quoted as beef cattle.

The Short Horns are a quiet, gentle race of cattle, and are not

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so well fitted by nature to shirk or rough it for a living as some of the smaller races, but it is claimed for them that they will make a larger growth upon the same food than any other breed; and Flint says: "It has been said by very high authority that the Short Horns improve every breed they cross with." This breed is making great headway in the British Empire. In New England it is spreading more rapidly than any other blood cattle. They have a firm hold in the Middle and Western states, and in the Canadas and Provinces they are becoming great favorites, and have commanded higher prices than any other cattle.

THE HEREFORDS.

A large, stately breed of cattle, usually of a red color, with white faces and upright spreading horns. Have not received great attention in this country lately, but were imported here many years ago, and for a time were quite popular, but they have now, with few exceptions, been so incorporated into our native races as to lose their identity, with the exception of their white faces. This breed was much more prevalent here forty years ago than now. The Herefords make the very best of working oxen, easily matched, fine beef, but ordinary cows.

Of the ten or more distinct breeds of cattle in Europe, many of which are to a great extent confined to particular localities, and raised for specific purposes, I have thought proper to call to your notice only six, deeming the other of no particular excellence for the purposes for which we use cattle in our state at the present time. At no time in the history of this country have the milking qualities of a breed of cattle commanded so much attention as at present, and it is difficult to place too much value upon this quality; still their value for beef ought not to be kept out of sight, for our agricultural statistics show that the yearly value of beef animals slaughtered fully equals all other purposes to which our cattle are applied, viz: butter, cheese, milk used for other purposes, veal, and the work of oxen.

I classify the different breeds of blood cattle which I have commented upon as follows:

When beef, milk and work are the objects, when the keeping is above middling, and when a cross with our native or grade races is desirable, I give a decided preference to the Short Horns. When the keeping is of an inferior quality, especially in hilly districts, and when work, milk and beef are the objects, the

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Devons have no superior. When the keeping is of an ordinary quality, and when milk is the main object, the Ayrshire stands as high as any. When cheese is the object, when quantity of milk is desirable, and when the keep is good in quality and abundant in quanity, the Dutch are inferior to none. When working oxen are the main object and beef desirable, and when the keep is good, the Herefords have few equals. When the quality of milk and butter, and not the quantity is the main object, and when gentleness of treatment, rich food and good shelter are sure, the Jerseys need fear no competitor.

No candid man can fail to see that the uncertainty of producing good stock from even the best of our native cattle is having a very discouraging and damaging effect upon cattle raising in this state. There need be no fear of disappointment in blood cattle, for they will uniformly produce their like, unless the stock has been injured by bad usage. Good judges estimate that any man may double the value of his stock in two years by the introduction of blood cattle. Others estimate the gain as high as $10.00 yearly per head. I think that $5.00 net yearly gain of blood cattle over the native not a high estimate, and would if applied to all the cattle in our state amount to the nice little sum of $1,500,000 annually.

POINTS IN SHORT HORNS.

[Paper read by S. W. Buffum, of Winchester.]

At one of the meetings of the Board of Agriculture, Mr. Perkins, of Jefferson, the member from Coos, asked if it was a disqualification or a defect in Short Horns, if they had dark noses. He had, he said, noticed that some possessed black or dark noses, while others did not. Mr. P. thought it was a question of some importance, as farmers were turning attention more to improved stock, and it was essential that in buying no impure or objectionable blood be obtained. The general opinion was that though not a disqualification, it was an objection. Mr. Buffum of Cheshire county, a breeder, gave a strong expression against it, admitting that the defect was too often overlooked by breeders.

While the board had the matter under discussion, it was voted that Mr. Buffum present a schedule of points desirable in Short Horns. At a subsequent meeting he presented the following:

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SCALE OF POINTS FOR A SHORT HORN BULL.

1. Purity of breed on male and female side; sire and dam reputed for docility of disposition, early maturity and aptitude to fatten; sire, a good stock-getter; dam, a good breeder, and giving a large quantity of milk, or such as superior for making butter and cheese.

2. Head muscular and fine; (the head of the cow, small and tapering; longer and narrower in proportion than that of the bull;) the horns fine and gradually diminishing to a point, of a flat rather than of a round shape at the base, short and inclined to turn up—those of a clear, waxy color to be preferred, but such as are of a transparent white, slightly tinged with yellow, admissible; ears small, thin and covered with soft hair, playing quick and moving freely; forehead short and broad, especially between the eyes, and slightly dished; eyes bright, placid, and rather prominent than otherwise, with a yellow rim round them; lower part of the face clean, dished and well developing the course of the veins; muzzle small; nose of a clear orange or bright chocolate color, the former much preferred; nostrils wide and open; lower jaw thin; teeth clear and sound.

3. Neck fine and slightly arched, strongly and well set on to the head and shoulders, harmoniously widening, tapering and rounding as it approaches the latter point; no dewlap.

4. Chest broad, deep and projecting; the brisket on a lower line than the belly.

5. Shoulders broad, strong, firm and well placed; fore legs short, straight and standing rather wide apart than narrow; fore arm muscular, broad and powerful, slightly swelling and full above the knee; the bone fine and flat; knees well knit and strong; foot flat and in shape of an oblong semi-circle; horn of the hoof sound and of a clear, waxy color.

6. Barrel round and deep, and well ribbed up to the hips.

7. Back short, strong, straight and broad from the withers to the setting of the tail; crop round and full; loins broad; knuckle bones on a level with the back; tail well set on a level with the back, or very slightly below it, fine and gradually diminishing to a point, and hanging without the brush an inch or so below the hock at right angles with the back.

8. Hindquarters, from the knuckle to the point of the rump, long and well filled up; twist (the junction of the thigh of the animal behind) well let down and full; hind legs short, straight

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and well spread apart, gradually swelling and rounding above the hock; the bone fine and flat below; foot flat, and in shape making an oblong semi-circle; horn of the hoof sound, and of a clear, waxy color; legs not to cross each other in walking, nor to straddle behind.

9. Skin of a medium thickness, movable and mellow; a white color is admissible, but a rich cream or orange is much preferable; hair, well covering the hide, soft and fine, and if undercoated with soft, thick fur in the winter, so much the better. (A black or brown nose or rim round the eye, black or dark spots on the skin, and hair decidedly objectionable, and indicative of coarse meat and bad blood.)

10. In the cow, udder broad, full, extending well forward along the belly and well up behind; teats of a good size for the hand, squarely placed, with a slight oblique pointing out, wide apart; when pressed by the hand the milk flowing from them freely; extra teats indicative of good milking qualities, but should never be milked, as they draw the bag out of shape; milk veins large and swelling; milk excelling either in quantity or quality for making butter or cheese.

11. Good handling.

12. Sure stock getter; the cow sure breeder.

13. Stock, when made steers, certain to feed kindly for beeves, at any age, and make prime beef. General appearance must be considered.

DISCUSSION OF BREEDS.

[Remarks by Mr. Buffum, at Farmers' Meeting at Concord.]

At the farmers' meeting at Concord, Mr. Buffum commended the paper read by Judge Roberts, and expressed the hope that it be extensively published. He said: New Hampshire can double the value of her stock in ten years, and that, too, not by increasing the number or the cost of keeping, but by giving some attention to breeding. Our cattle can be made to mature quicker than they do now. Devons are no better at four years than Short Horns at three years; this has been shown by the experience of farmers. In teaming the year round, Durham oxen are by far the best, and, when desirable, can be turned into the best of beef in a short time.

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He would say to the farmers of New Hampshire, never use a grade bull. It is a shame that the agricultural society offers premiums for grade animals. It is a loss to the county and the state, and unworthy of any men called upon to offer premiums. It is going back a hundred years. It is cheating ourselves out of a hundred years' experience of men who were as good, if not better, farmers than we are. The Cheshire county cattle are worth a cent a pound more for fattening purposes, than any other, simply because we use the pure blood instead of the grade bull."

Mr. C. S. George, of Barnstead, advocated encouragement to native stock (evidently for the sake of creating an interest, for Mr. George is a successful breeder of Short Horns). He said there was a vast difference between the New York Dutch and the Holstein. It was the New York Dutch, if any, that failed at butter making. He knew that the half-blood Holstein were excellent for butter. It was beyond question that the Jerseys were superior for butter. It is a question whether the Devons are superior. He urged giving more attention to native stock and less to pure blood. It is not the beauty of a cow that increases her good milking qualities. He did not care for beauty; it was milk and cream and butter that he was after. Beauty may be well enough, but generally it was the homeliest cow that gave the most and best milk. Give the good old native the same kind of feed, the same care, the same judgment in selection, and they will beat all your fancy blood stock. At the same expense the native will make more milk and butter, and are better for breeding. Disease does not take hold of natives as it does of your pure bloods. Pleuro-pneumonia was never known to break out among a herd of natives. He thought the Holstein the best breed of imported cattle. In breeding, never cross a big bull with a little cow; but always a big cow with a small bull. He thought a great deal of grade cattle.

Mr. Buffum spoke again, defending the pure bloods, and although allowing that sometimes in individual cases the native might be about as good for milk, he claimed that there was no certainty that you could breed a good cow from the native, while with the pure blood every calf was of better blood than its mother, and consequently every year the value of the stock was increasing. Especially is this true in the stock noted for its milking strains, like the Princess.

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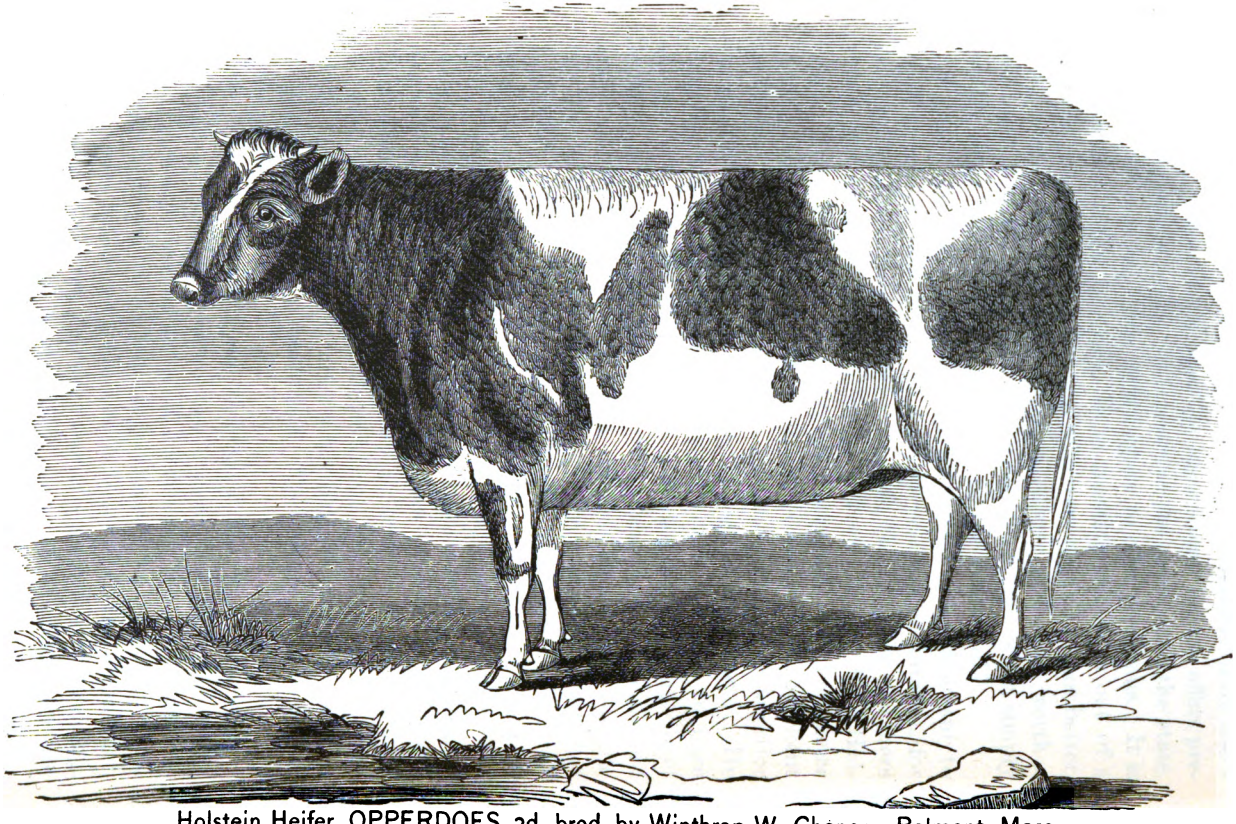

Holstein Heifer, OPPERDOES 3d, bred by Winthrop W. Chenery, Belmont, Mass.

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LAND DRAINAGE.

At the request of the Chairman of the Board, Joseph B. Walker, Esq., of Concord, an educated and public spirited farmer, prepared a paper on the important subject of Drainage which he has read at many of the farmers' meetings during the winter. It has everywhere been received with great favor, and is justly considered one of the most valuable contributions to our Report.

UNDERDRAINING.

[Address by Joseph B. Walker, Esq., of Concord.]

Sir Walter Scott used to say that "There was nothing more conducive to a man's health than a walk of a mile before breakfast, particularly if over his own land." Confident that there is truth in this remark of the great novelist, I invite you to a stroll this morning over the bogs and marshes and drenched meadows of our own state, hoping that repeated mirings and successive leapings of sluggish streams may not only afford wholesome exercise, but convert you all to a belief in thorough drainage.

The census returns of the year 1870 are not particularly flattering to our New Hampshire agriculture. One hundred and seventy-seven towns have now a less population than they had ten years ago, and these are all, or nearly all, farming towns. The war called away many of their most vigorous sons and only a part of them have returned. The superior attractiveness, real or fancied, of other pursuits have caused the removal of some, while the cheap, rich lands of the west have induced the emigration of others still. Now, in many sections, farming languishes. Buildings and fields show signs of neglect. Labor, scarce and dear, is not unfrequently performed in great part by old men and boys. It seems at first glance as though the great leading interest of the state was declining and passing under a cloud.

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But it is unmanly to take counsel of our fears or to yield to temporary despondency. While some localities may have diminished their population, others have increased theirs. People are gathering more than formerly at important centres, and along the lines of railways, and many of our towns show an important increase during the last decade. Much, indeed, of the loss, at which we sigh and shrug our shoulders, is more apparent than real — a simple movement of population from one locality to another more inviting.

Yes, it is a mistake to despond of our husbandry. Its future will be just what the farmers of New Hampshire resolve to make it. Many vicious practices and erroneous notions, that have long prevailed to our hurt, will doubtless die, and ought to die, but from their ashes, Phœnix-like, will arise others to gladden our fields and rejoice our hearts. Our agriculture is just now in a transition state, from a lower to a higher plane, and at the very point of its passage at which it needs the aid of clear heads, willing arms and energetic souls to lift it into regeneration and a prosperity commensurate with its importance. To secure this result we must farm better than we have been wont to do. We must cultivate better our tillage lands; we must improve our pastures; we must devote more care to our herds, and learn to appreciate the difference between a mongrel and a thoroughbred animal; we must reclaim and drain our wet lands and make every acre, whether water, land, or mountain crag, produce something.

I am aware that drainage has had sturdy opponents, as well as earnest advocates. There is a kind of conservatism in the world which inclines men to take things as they are and to keep them so. You remember, perhaps, the deprecatory remark of Aunt Dorothy to her niece, reported to us by Mrs. Charles in her "Draytons and Davenants," when a few years before the protectorate, Oliver Cromwell called at her brother's house in the fen country, where they had often talked upon this very subject. "I can't think why they wont let the fens alone. They did very well for our fathers as they were, and they were better men than we see now-a-days; and if the Almighty made the fens wet I suppose he meant them to be wet." With profoundest reverence for the opinions of Aunt Dorothy, we are constrained to differ from her on this point, and conscientiously believe He did not mean them to be forever wet.

The wet lands of this state are of much greater extent than is generally supposed, and I hazard little, I think, in saying that

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twenty per cent. of all its lands would be improved by thorough drainage. A moment's reflection will call to your remembrance their varied character. Some are abandoned river channels, now elevated above the ordinary level of neighboring streams by successive crops of aquatic vegetation, or by alluvial deposits, or by both; having a soil of great fertility, which, enriched annually by freshets, is capable of bearing abundant crops for generations.

Some are bogs composed entirely of vegetable matter, situated in valleys and basins, to which the surrounding hills afford extensive water-sheds which precipitate upon them every shower that falls, as well as the melted snows of every winter. These abound in numerous elements of fertility, but unimproved are worthless and inaccessible. Many of these, partially drained and cleared, produce full crops of aquatic grasses, but of slight value as herbage or as the bases of manure. Some of them are still in the forest and sparsely covered with bushes and sickly growths of scattered trees. Others are lands of good quality but continually drenched by the constant overflow upon them, at the sides or from beneath, of springs which render comparatively futile all attempts at successful cultivation. Others still, being upon hills and high swells, are kept continually wet by the compact or clayey nature of their soils or from being underlaid by subsoils impervious to water. Not unfrequently small patches of these disfigure the beauty of the best fields of a farm or separate them from one another by an impassable bog.

We have no data from which to estimate exactly the aggregate area of these lands, but general observation establishes the fact of their great extent. Rich, in localities where often rich lands are rare, and in many respects the most fertile of any we have, they are producing very little of value to man or beast; for while no important farm plant can grow without water none can grow in, or under water. Their thorough improvement would double the hay crop of the state, and increase immensely its other agricultural products. The first step in this direction is their

DRAINAGE.

This, as just intimated, is no new invention. It is as old, probably, as agriculture. The Romans practised it, and their writers upon husbandry; Cato (B. C. 234), Palladius (B. C. 350), Columella (A. D. 42), and Pliny (A. D. 23), make repeated mention of

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it. Varro (B. C. 116), the friend of Cicero, says that in September "you must dig new drains and scour the old ones." Some of them give directions for the construction of drains of stones, faggots and straw, detailing the different methods then in use.

Our English forefathers made use of it at an early period. In the last days of Queen Mary (1557), quaint old Thomas Tusser, in his homely but sensible doggerel, told the farmers of his day that

> "The fen and the quagmire, so marish be kind,
> And are to be drained, now win to thy mind;
> Which yearly undrained, and suffered, uncut,
> Annoyeth the meadows, that thereon do 'but."

This, doubtless, was open, shallow drainage, and we hear little, if anything, of a deep and thorough kind, until, some two hundred years later, Captain Walter Bligh published an important work upon the subject (1752), called "The English Improver, Improved," wherein he discussed the subject very fully and said, among other things, "Only make thy drayning trenches deep enough and not too far off thy floating course and I'll warrant it they drayn away that under moisture, fylth and venom," and to clinch his proposition triumphantly remarked, in the language of Bildad to Job, "Can the rush grow up without mire? can the flag grow without water?"

The doughty captain was certainly right, and if we can only "drayn away the under moisture, fylth and venom" from our wet lands, they will be at once docile to manipulation and vie with the prairies in fatness.

Draining with tiles is of later date. Indeed, we hear but little of their use before the beginning of the present century; since then, they have been extensively employed in England and a good deal in this country. Mr. Henry Coleman tells us that, twenty years ago, the Duke of Portland had seven thousand miles of tile drains upon his estates alone, and he is but a single one of the great proprietors who have, of late years, been enhancing the value of English land by drainage.

Mr. John Johnson, a Scotch farmer living in Seneca County, New York, was the first to introduce tile draining into the United States, commencing it upon his farm in 1835. His example was soon followed by others in different sections of the country. The first used in New Hampshire were brought from Albany, some twenty years later (1854), by William Conner, of Exeter, and

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used upon his land in that town. The year following, Judge French, then residing there, imported more of them and was, subsequently, instrumental in encouraging their manufacture at Exeter where they are still made.

Thus far, drainage has been practiced more abroad than with us. Density of population and dearness of land accounts in part for this fact. In Great Britain, extensive drainage enterprises of a public character, also, have been instituted, aided in some instances by the Government.

In Holland the Polders afford much of its most productive soil, worthless, however, but for persistent drainage. About a score of years ago the whole bed of Haarlem Lake was laid bare, through the gigantic agency of immense steam pumps, and an area of forty-four thousand five hundred and twenty acres, before submerged to a depth of fourteen feet, was made dry land, at an expense of $80.69 per acre.

EFFECTS OF DRAINING.

The effects of drainage are several and very marked:

1. It renders the land accessible at all seasons of the year. Most swamps and bogs are so soft and miry that, previous to drainage, all attempts at cultivation were vain, many of them being at times so flooded as to render necessary the removal of the wretched grasses they produce by human effort and upon poles. If, perchance, at a dry season of the year it be possible to plow, manure or re-seed them, it will be of little use, for the dressing will be washed out by the next flooding and the lightened soil soon settle down as sullen as before; while all tame grasses sown upon them, after a brief and unequal contest, will yield the ground and disappear. Properly drained the same land can be worked at pleasure; fertilizers will show themselves as quickly and as long as on soils needing no draining, and crops before impossible grow luxuriantly.

2. Drainage, too, prevents that maceration of the roots of plants so fatal to their growth, as well as that baking and cracking of the soil frequently observed in midsummer on wet lands of a clayey nature. On drained fields we find no heaving from the ground of the roots of young plants by frost, to the great injury of an anticipated crop.

3. Draining secures a free circulation of air in the soil. Carbonic acid is brought, thereby, to the roots of growing plants and

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many insoluble silicates of the soil and manures commingled therewith are gradually reduced to a condition fit for their appropriation by growing plants.

4. It also raises the temperature of the soil,—a point of much consequence in cold latitudes. The sun's rays, no longer repelled by standing water, for water is warmed from below and not from above, sink into the soil and awaken there an energy that a drenched one never has.

5. Removing the surplus moisture which before partially passed off by evaporation only, drainage lengthens materially the season, an important fact where the active vegetation does not much exceed four months, at longest, thereby rendering possible the production of cereals on grounds where previous to drainage poor aquatic grasses only could be produced.

OPEN DRAINS.

There are two methods in use for the removal of the surplus water from a soil, viz:

1. By open ditches.
2. By underground drains.

The first is the primitive means, suggested by nature itself, and under some circumstances, the one to be preferred. It is liable however to important objections.

1. It mars the beauty of a field to divide its surface into patches, by open trenches crossing it at frequent intervals and in all directions.

2. These occasion great inconvenience in tillage operations, for it is next to impossible to cultivate the ground to their edges, and if done this is accomplished at increased expense.

3. Unless made very slanting, a course to which grave objections may be urged, the sides of open ditches are almost sure to be precipitated by frost every winter, to the obstruction of the drain and the necessitating an annual outlay for keeping clear the channel. As this clearing is oftentimes impossible, until late into the summer, imperfect drainage occurs at the very time of all others when it is most deleterious.

4. And these open ditches occupy much land which might otherwise be devoted to cultivation. In a field of ten acres, drained in this way, it will be found upon examination that about one acre is lost in the ditches. Therefore, in estimating the expense

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of draining by this system, the value of the land thus taken becomes an important item in the calculation.

But, notwithstanding these objections, the open ditch is oftentimes the one to be preferred, and is the cheapest where land is abundant and the materials for underground draining are scarce and dear; or where from the peculiar situation of the land, a surrounding, open, catch-water ditch will insulate and dry it, there this drain will generally be more desirable than any other.

We find, however, that where land has become dear and its cultivation is carried to a high state of pefection, the open trench is generally discarded and underground drains are preferred. The reason of this is obvious, as by their use the objections just suggested to open ditches are no longer encountered. Natural beauty, a saving of land and convenience in tillage operations, all favor their adoption. Over a field thus drained a team may pass from end to end without interruption; the furrows may extend across it unbroken, and over it may pass, with no obstruction, the harrow, the cultivator, the mower, the hay-tedder and the horse-rake.

UNDERDRAINING.

An underground drain may be made of anything that will admit water and preserve an open channel for its passage.

1. The Romans, as already stated, sometimes used brush and even straw. I have known meadow hay employed for this purpose in our own day. All such materials however soon perish and are mentioned here rather to deprecate than to commend their use.

2. On stiff, adhesive soils underground drainage is sometimes effected by drawing a pointed plug through the ground, at the desired depth, which forces open a channel of its own size. This generally remains open for some years. The plug, attached to a sharp, flat, perpendicular standard, joined to a beam, like that of a plow, is drawn through the soil, sometimes by means of a movable capstan and at others by teams. This method has been used in England and somewhat upon the prairies of the west. I imagine however that its cheapness is more than counterbalanced by its want of durability, and that this consideration, joined to that of the character of our soils, will preclude its adoption among us.

3. Poles, laid in pairs a few inches apart and covered with a board, a slab, or a third pole, have often been used with success.

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Our venerable friend Levi Bartlett, showed me drains of this kind upon his farm, in Warner, which had done service for a long period. But while they are cheap the materials of which they are made are more or less perishable and their channels liable to obstruction by field mice and silt.

4. Stones have been used longer and perhaps more than any other material. We have at least two thousand years' experience with them, demonstrating conclusively that of these may be constructed drains of the most durable character, as they never decay.

Drains of this material have been made in various ways, governed more or less by the shape of the stones, the character of the ground and the fancy of the builder. Sometimes rounded cobbles have been thrown promiscuously into the bottom of an open trench, to the depth of a foot or more, and then covered, first with a sod, and afterwards to the level of the ground with earth. Thus constructed they answer a good purpose for awhile and sometimes for many years, but are liable to stoppages, particularly if the fall be slight.

A better and more common way is to build, first, a small covered water course, of selected stones, and around this, to the depth of a foot or more, pack others of indiscriminate sizes, afterwards filling as before the trench to its top with earth. A man must be tough and well nigh immortal to outlive the usefulness of such a drain, for, if well made in compact soil, his grandchildren and great grandchildren will arise and call him blessed for leaving to them such an inheritance. The abundance of stones on many of our farms and the desirableness of their removal will long render this drain a popular one.

5. But the best drain of any, all things considered, is the tile drain, and, in localities where its cost is not a serious objection, will eventually be more used than any other. Tiles are simply pipes, generally about a foot long, made of clay and burned in a kiln like ordinary brown pottery. They are of various forms. Some present a section resembling a horse shoe, and for that reason are called the horse-shoe tiles; bottoms of the same material accompany these upon which they are laid. Some are simply round pipes with collars over the joints to keep them in place. Others, called sole tiles, and having an egg-shaped bore, are externally flat upon the bottom with circular top and sides. There are still other kinds, and among them one made at Pembroke, in

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this State, in the same manner and of the same material as an ordinary brick, but with a longitudinal semi-circular groove in one side. The bore is completed by laying them one upon the other and breaking joints as the conduit is extended. These all answer a good purpose.

The round tile may perhaps be laid with the least care, as the collars keep the joints in place, but no drain should be laid otherwise than carefully. Thus far, the sole tile has been more commonly used in New Hampshire than any other, and always, I believe, with success. The Pembroke is probably the most durable of any, but its present cost is about double the price of the sole tile, that of the former being about three and a half cents per line or foot, and that of the latter, about two at the place of manufacture. In favor of the tile drain may be urged:

1. Its durability. It has not been in use long enough to determine precisely how long it will last, but experience already shows that it will do good service for generations.

2. Less excavation is required for this than for stone drains, occupying as it does but little space and allowing the ditch to narrow, as it deepens, to a width at the bottom little more than that of the tile itself, thus diminishing materially the cost of the drain.

3. The trench once prepared, tiles are laid at very slight expense, compared with that required in the construction of stone drains. They are simply to be placed end to end in the bottom of it and then covered with earth.

4. If at any time an obstruction occurs it is readily found and easily removed by digging down at the point where it appears and clearing the obstructed tiles.

The only serious objection to this kind of drainage is the expense of the necessary tiles. I am not aware that any durable substitute save stone has been found for them. It has however more than once occurred to me that conduits of wood might in some places be used successfully. I have upon my own farm a drain of two-inch white pine plank through which the water flows constantly and which is as sound to-day as it was when laid in 1856, fourteen years ago. That pipes of wood, similar in shape and size to those made of clay, might be manufactured in many localities at a comparatively slight expense there can be no doubt. If laid in soils of pretty even temperature and continually wet, they would doubtless last for many years. The economy of their

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use may be problematical and can be satisfactorily settled only by experience. The experiment is worth the trial.

HOW TO DRAIN.

Several points should be definitely settled before entering upon any considerable work of underdrainage, otherwise much time and money may be wasted, and the object sought imperfectly attained, if at all. If possible, a comprehensive plan of the whole work should be made before a single trench is opened.

Besides this, a little enthusiasm in the work is important, a settled feeling, for the time being, that the present is a more important enterprise than all others — an enthusiasm akin to that manifested by the Emperor Dioclesian, (A. D. 305) when, after having abdicated the throne and retired to his villa, sick of the cares of state, he was asked to resume the purple and replied, "If you could see the cabbages I raise in my garden you would not ask me to take a throne." Such an enthusiasm puts things through and ensures success. Thus prepared,

1. The first step should be to determine from a careful examination of the ground the inclination of its surface and the sources of the water to be removed. Sometimes the piece to be drained is a basin, surrounded by hills forming a water-shed which turns the rainfall of many acres upon a very few. At other times, it is drenched by springs overflowing at the confines of it. In either case a simple, isolating, border trench will generally intercept the flowage and be found sufficient.

Sometimes it is underlaid by a subsoil impervious to water, or is of a clayey nature, admitting percolation but slowly, or is kept continually wet by springs gushing up from below. Here a border trench would do little good and a system of cross drains must be laid.

At other times the land is an abandoned channel or low alluvial ground near a river and is kept wet by springs or occasional inundations or by both. Here, a single open ditch may perhaps suffice; more probably however border and cross drains will be found necessary.

2. The second point will be to secure a sufficient outlet for the drains and determine its location. Without this all hopes of success will be vain. It must be low enough to secure a free dis-

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charge of all of them, and, if possible, at the lowest point of the field, less excavation being required for it here than elsewhere.

3. The third point to be settled will be the location of the main channels into which the laterals more or less numerous may enter. A careful study of the topography of the field will generally determine this, without difficulty, though sometimes the aid of a water level or even a theodolite may be requisite.

4. These three points having been determined, viz: the origin of the offending water, the best place for it to leave the field and the location of the main conducting channels, the problem is about solved. It only remains to settle where the laterals shall be placed, which a little farther observation of the ground and its formation will readily determine.

5. The surface of land to be drained often lies at a considerable angle to the horizon and the question has been much discussed whether, in such cases, drains should be laid up and down or lengthwise of the slope. A little practical experience, and even a little observation will prove that the former is the true course, as much of the water to be removed will miss them, if laid in the other direction, by passing above or below them in its flow down the hill; whereas if it be a long one, and the drains of good depth, most of it will find its way into them, ere it reaches the bottom.

6. That a drain must have some fall is self-evident. What that shall be is not so plain, and no exact rule of universal application can be made to govern it. If the inclination be too slight the flow of the water will be sluggish and the channel liable to obstructions; if too great, whenever a large quantity of water is to be discharged, the lower part of the conduit may be crowded beyond its capacity of discharge and some of the water be forced out at the joints, drenching the land about it.

Economy requires that the inclination be such as to insure a free flow of water, for up to the point just alluded to, in proportion as the velocity of the flow is increased the size of the drain may be lessened and its cost diminished. An ordinary tile drain, falling three inches in one hundred feet, will discharge less than half as much water as one falling one foot and but about one-fifth as much as one falling four feet.

Sometimes the ground to be drained is so level, and the distance to the outfall so great, that the possibility of any drainage is problematical. In such cases the question arises, what is the least fall sufficient for the purpose? This was presented to your

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speaker for solution some fifteen years ago, upon his farm in Concord. About thirty acres of land, nearly level, had for three generations been considered worthless and lain unproductive for want of drainage. The water stood upon it about six feet above the summer height of Merrimack river, where was its outfall, distant about three-fourths of a mile, (three thousand five hundred and eighty-nine feet), and affording an average descent of only one inch in every fifty (49 61-72) feet, to begin with, and diminishing of course according to the depth of the drainage ultimately effected. Was drainage practicable in this case, and was the experiment worth the trial at an expense of five or six hundred dollars? It was determined to make it at all events and made it was.

The impracticability of maintaining an open ditch, varying in depth from seven to fourteen feet and a half, for the first forty-six rods, near the river and in soft alluvial soil, suggested a covered drain of two-inch white pine plank, twelve inches wide and eight inches high, inside measure, for that distance from the outlet. This was constructed and laid on an average rise of one inch in fifty-one feet, which, considering the frequent rise of the river above the mouth of it, at all seasons, has proved none too much. For the remaining distance of two thousand eight hundred and twenty-two feet, an open ditch was cut and much of the way with little if any fall.

Experience soon demonstrated two things, viz:

1. That a given amount of water would pass through a smooth covered drain in less than half the volume it would through a shallow open ditch of uneven bottom, and

2. That, in this instance, drainage by the latter was but partially successful, owing to frequent obstructions, resulting from a falling down of its sides, sedimentary deposits by freshets and a rank growth of flags in the bottom which every summer was sure to produce. A farther sloping of the banks nearly obviated the first difficulty, but the other two remained.

The thought of boarding the bottom of this open ditch one day suggested seemed almost an inspired one, promising, as it did, not only to facilitate its cleansing, when necessary, but to prevent altogether the growth of obstructing aquatic vegetation and afford a smooth bottom for the water to flow over without friction. This was done for some three-fourths of the whole distance and the fascinating dream was realized — until the next spring freshet brought a new deposit of sand, from which sprung a new

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crop of flags, and renewed the nuisance, which, it was supposed, had been abated forever. For these evils the covered drain has been found the only practicable remedy, and when fully completed will doubtless insure a satisfactory drainage of the meadow to an average depth of three feet; thereby showing the practicability of a fall of one inch in every one hundred feet. Were the same experiment to be repeated, even a better result than this could be reached.

At what depth drains should be laid admits of no one definite answer. They have been placed at various depths, from one to four feet, and in all instances have done good. They must be low enough, however, to sink the water table sufficiently below the surface of all parts of the field to insure everywhere a wholesome soil.

This depth will depend upon the character of the ground. If a porous one, through which water percolates readily, it may be less than when compact, admitting it but slowly; or when spongy, where capillary attraction raises the water to a considerable height above the drains. The use to which the land is to be devoted is also a consideration to be regarded. If intended for grass only there is less need of deep drainage than if cereals are to be raised upon it. But, whatever the soil or the future crops, every drain must be below the reach of the plow or the frost.

Some of our most experienced drainers have fixed upon four feet as the depth to be generally adopted, ranging above or below it, as circumstances may suggest. If, to any, this shall seem an unnecessary one, it may be added that the lower drains are sunk, the farther they will draw, and that their frequency may be diminished as their depth is increased.

On ordinary soils, if laid at this depth, they might be placed from fifty to sixty feet apart and afford a good drainage. On clayey soils this distance would be too great and should be materially lessened.

Such are some of the principal points arising upon an examination of the important subject of drainage. If our superficial allusions to them shall stimulate you to a further consideration of it our end will have been attained.

Our distinguished historian, Mr. Bancroft, speaks of the life and occupation of the Pilgrims, as "a plain country life and the innocent trade of husbandry." Such are ours. To us has been committed the care of the land. Let us thank God that we are "landed

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proprietors" and appreciate our good fortune. The world has never before seen such an agricultural people as the last two centuries and a half have reared on American soil — an intelligent yeomanry owning the farms it tilled. Before, an idle aristocracy had everywhere possessed the land and appropriated the fruits that other hands had raised. Even to-day, thirty thousand persons own the whole territory of England. The other nineteen millions get on as best they can. Here, how different! Ten years ago New Hampshire alone had thirty thousand farms and every man a farm who wanted one.

Something elevating and strong comes from a sense of the ownership of land. This is not, like everything else, perishable property, passing from one to another by mere delivery. It is, as its name asserts, real estate, conveyed only by formal deed, signed, sealed, witnessed, solemnly acknowledged and delivered. A man stands independent and consciously a man, upon the acre he owns. He is an acknowledged proprietor of a part of the great globe the Almighty has hung in air. His acre is to him a realm, and more than a hundred and sixty square rods of earth's surface — is rather, extending inward and outward both, an immense pyramid, whose shaft, like the hollow cone in Dante's Inferno, reaches downwards with diminishing proportions to where gravity dwells, and whose base with spreading dimensions continues upwards through infinite space even to the confines of other spheres. To what degree soever we appreciate our inheritance and improve our opportunities we meet manfully life's duties and deserve life's success.

DRAINING HAMPTON MARSHES.

In connection with the general subject of drainage it may be well to refer to a matter which has called out some recent discussion — that of diking and draining Hampton Marshes. It was suggested by the following newspaper article written by the Secretary:

RECLAIMING HAMPTON MARSHES.

Everybody who has ever been to Hampton Beach has looked upon the broad marshes of that town and vicinity and entertained the thought that possibly they may be fully reclaimed from the

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dominion of the sea. Since our first knowledge of this section, subject this hour to the ocean and then appearing to be an undisputed area of land, it has been wonderfully improved by the construction of frequent and long extended drains across it. The extent of these drains is measured not by rods, but by miles, counting up above the tens into the hundreds column. It has been estimated that five hundred miles would not be an extravagant statement of the length of all the drains which have been dug there within the last half century. The result is an increase of many tons of salt hay, year by year.

This fact suggests the question whether these immense tracts of land cannot be rescued from the influence of ocean so far as to save them from being swept over by the tides. Can they not be diked in imitation of the operations in Holland, by building a wall of earth along the margin of the waters? It may be next to impracticable, but it is not more chimerical than many enterprises which have succeeded and returned abundant rewards. The diking system already referred to may be cited. Then there is the section of England known as the great fen country, where acres upon acres were a waste marsh, or swamp, which, after years of toil, of failure, and great expense, became productive, and is now one of the most fertile portions of the island.

Thousands of tons of marsh hay are annually harvested on these Hampton marshes, much of which is stacked upon the spot on elevated platforms, to be kept from the influence of the tide. In the winter time, when the marshes become solid with frost, teams can reach a large portion of the region, and the salt hay is taken to the barns miles away, and fed out to the stock with satisfactory results. If the land could be kept from the tides the grass would undoubtedly improve in quantity and quality, and it seems to us, who claim to know but little regarding this kind of grass or the nature of the marshes, that the result might eventually compensate for the labor and expense. If there are insuperable objections will our friends who understand them write them up?

The article called out the following from a practical operator of marsh land, who writes with an evident understanding of his subject. It was written by Mr. J. P. Welch, of Newmarket:

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DRAINING THE MARSH.

I have recently seen your article on reclaiming the marsh-land at Hampton and vicinity. As I have some knowledge of improved marsh-land I take the liberty to write this article on the subject.

The reclaimed salt marshes I allude to are in Nova Scotia, situate in Kings, Annapolis and Cornwallis counties, some of which are very extensive. The grand barrier in Kings county is twenty-five miles long, also the Wellington dike upwards of fifteen miles long. Some marshes are so extensive that a man has been known to ride horseback three days to find his cattle. There are many more of smaller dimensions, but fully as good.

When we take into consideration that the tide rises between sixty and seventy feet on this part of the Bay of Fundy, we may well calculate it is something of an undertaking, yet it has been accomplished with the greatest results. An embankment similar to the levees on the Mississippi has been thrown up to keep the salt water from overflowing the marshes. The embankment has to be thrown up about eight feet high the whole distance. Very deep ditches exist, cut by the tide water, with the sluices at the bottom shut with a gate that hangs on hinges in such a manner that when the tide rises it closes the gate; when the tide falls what fresh water may have accumalated above the gate while the tide was rising forces it open and lets the fresh water through.

In view of so many obstacles to be overcome, with such a tide, it seems it would be an easy matter to reclaim large tracts of marsh-land now almost worthless, where the tide does not rise high. The price of this land at the time I was there, about eight years ago, was four hundred dollars per acre. It bore on an average about three tons to the acre of the best quality of herdsgrass I ever saw, and this without any manure. They also raise a grass they call English brown-top, which is still better for cows, being more juicy.

I think it a subject worthy being talked up and put in practice, as it would be very remunerative to parties interested. In these marshes there are no fences but simply a furrow turned up as a line or division, each man being allowed so many cattle to graze according to the acres he owns. Every man is also compelled by law to support the levees or dikes, as they are called there. I believe the government helped to erect them.

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Any one wishing to visit them can do so by taking the steamer at Portland for St. Johns, New Brunswick, thence by steamer to Annapolis. The dikes on the marsh are built from the mud; they become very solid in time.

About the same time the above article appeared, Mr. Warren Brown, of Hampton Falls, wrote the Secretary, taking the opposite ground. His article, which was published, only led to still further inquiry. Accordingly, Mr. Brown, at the request of the Secretary, prepared the following full and exhaustive paper on the subject of

RECLAIMING THE MARSHES.

Sometime since, the question of reclaiming the tract known as Hampton Marshes, by shutting out the tide, was broached. I wrote an article, taking the ground that, under existing circumstances, they were more valuable in their present condition, and sold for as much per acre as the farms which possessed only an agricultural value, advocating their improvement by thorough draining, bringing them into the highest productive condition as salt marshes, without attempting to change their nature. Mr. Welch, of Newmarket, in an article published a week later, thought the project feasible and easy of accomplishing, citing instances in Nova Scotia where marshes had been reclaimed, becoming very productive and of great value. I have since given the matter considerable attention, having sought information from practical and thinking men, which has tended to confirm me in my former expressed opinion. Those who advocate reclaiming them leave the Hampton river entirely from their calculations,—a river and its tributaries which drain the whole towns of Hampton, Hampton Falls, Seabrook, and portions of Exeter, Kensington, Stratham and North Hampton, forming the outlet for the drainage of nearly thirty thousand acres, furnishing a power sufficient to run not less than thirteen mills of different kinds, a portion of the year. This river winds its serpentine course through the marshes to the sea, and it would be a difficult task to dispose of the surplus water which would naturally seek this outlet.

In my investigation, I have found two distinct theories in relation to the geological formation of the river and marshes, which I will give without attempting to vouch for their correctness. First, that at a remote period the marsh was a fresh swamp, its lowest surface covered with water separated from the ocean by the sea

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wall, the water which drained in finding its sluggish course to the Merrimack near Newburyport. At a later period, a passage was forced near the present mouth of the river, letting in the salt water and changing the fresh swamp into a salt marsh. In defence of this, it is argued that the stumps of trees, evidently in the position in which they grew, can still be seen, and the remains of fresh-water vegetation are found at a little depth below the surface. Tradition says that some two or three hundred acres along the course of the river, now salt marsh, was, since the advent of the white man, an alder swamp. The second, which tends to strengthen the first, is, that the flat lands above Coffin's mills were covered by water, and its surplus drained into the Exeter and Winnicut rivers. Those who have given the subject close attention are convinced of its correctness. The appearance of the river channel and the little effort required to drain the water either way over a large tract, as has sometimes been done, go to support this theory. Admitting its truth, not much over half of the water, as at present, would find its way to the sea by the Hampton river. Between the tract last named and the marsh, the river passes for a mile between high banks, This is the only instance, from the source to the mouth of the river, where it is confined by banks worthy of mention. Some proof can be shown that this passage was made by some convulsion. These theories have the sanction of able and scientific men.

NAVIGATION.

The bar at the mouth of the river has proved a serious impediment; had the river communicated directly with deep water, a very different state of things might exist in this vicinity. As it is, a trade has been carried on by schooners and small vessels, (which have been built along the river ever since the country was settled), carrying, formerly, produce and fish; latterly sand, for plastering, which exists in excellent quality, and in the hands of enterprising men might prove profitable. Within the last few years, wood has been almost the sole freight.

David Nudd, Esq., an enterprising and public-spirited citizen of Hampton, in the early part of the present century, dug a canal, which still bears his name, shortening the distance a couple of miles to the sea. He also manufactured salt, which, after the war of 1812, was quite profitable, and was abandoned when the heavy

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duty was removed. The lumber composing the salt vats afterwards entered into the construction of the Granite House at the beach.

EXPERIMENTS IN RECLAIMING.

There have been a number of attempts made on a small scale. About the year 1830, the Shaws at Hampton built a dike nearly around twenty acres adjoining the upland. Before they had completed their work the Eastern Railroad was built, which passed through this tract, finishing the work for about twelve acres. English grass was sown upon the surface, and heavy crops were grown for two or three years, when it was killed out, leaving the land bare, save here and there a weed. It remained in this condition until the high tide of 1851 swept away portions of the dike, letting in the salt water, which has since had the dominion. Good crops of salt grass have been produced since. The only reason, in my opinion, why this experiment failed was want of drainage. A foot below the surface was like a sponge completely saturated with water. The drought took severe hold of the surface. The two conditions were sufficient to prevent success. Had it been properly underdrained, there is every reason to suppose it would have proved a valuable tract and productive in the highest degree. Other tracts had about the same history. Muskrats and other vermin burrowed in the dikes, letting in the salt water. In every instance they have been abandoned and again subjected to the influence of the tide.

PROJECTED DIKING.

Sometime about the year 1847 or 1848, a project was started, and met with considerable favor, to close up the railroad bridges and shut out the tide from there of four hundred acres lying above. It was claimed that the expense would be merely nominal, while the benefit would be very great. A number of meetings were held by the owners, but parties who used the river withheld their consent, and it was given up. Then the owners south of the river tried to cut off about a hundred acres, which was much more feasible, but the refusal of one owner to enter into the arrangement defeated this. I believe that it was for the best that these schemes came to naught. The imperfect manner in which it would have been done, if nothing else, would have produced fail-

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ure. The high tide of April, 1851, and again in November, 1861, washed away the railroad and carried away the track for a mile or more. Had the bridges been closed its effects must have proved much more disastrous than it was. Had the land been improved, the presence of so much salt water would have killed out the vegetation.

IMPROVEMENT.

About twenty-five years ago Col. Jeremiah Lane, a native of Hampton Falls, now a resident of Candia, introduced a system of thorough improvement by drainage, which was by cutting ditches four feet in depth and about twenty feet apart. The earth thrown out was removed and the surface left clear and smooth. The effect was that wet and unproductive land became productive, heavy crops being cut where formerly scarcely anything grew. Had the thorough system introduced by Col. Lane been carried out over the whole of the marsh, it would have increased the revenue, from then, thousands of dollars annually. Hundreds of miles of ditch have since been dug, generally from two to three feet in depth and eight inches in width. In a few years they close up at the top, while the bottom remains open, being filled and emptied by the rise and fall of each tide, which tends to keep the channel clear. The cost of digging and removing the earth is about twenty cents per rod. From fifteen dollars to twenty-five dollars per acre will generally drain effectually. Surface and situation have somethiug to do with the cost. Improvement in this direction was slow at first, but the idea has steadily gained ground that it was profitable. It has become an axiom that ditching pays. The appearance of our marsh has greatly improved. The dry, clean surface is a striking contrast with the soggy, water-soaked appearance of a quarter of a century ago. Generally, the lowest and wettest portions have become the most productive when improved.

OBSTACLES TO RECLAMATION.

As near as I have been able to get at the area, there are between three and four thousand acres in the tract known as the Hampton marshes, situated in Hampton, Hampton Falls, Seabrook and Salisbury, Mass. In order to shut out the tide effectually, an embankment would have to extend along the whole coast of Hampton, from thence to Newburyport and along the Merrimack to the

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high land, making a water front of twenty miles or more. The difficulties of maintaining such an embankment may be imagined when we consider that the volume of water poured over the sea wall north of Boar's Head in November, 1861, was sufficiently powerful to break it down and fill the road with stones to a depth of three or four feet. The draining from the rainfall over so large a territory as seeks its outlet by the river would prove no small task; although it would not be impossible to get rid of this surplus water, yet it would be attended with many difficulties. After this a system of underdrainage must be instituted to render the land fit for cultivation. They are valuable in their present condition, requiring neither fence nor manure,—two items of no small importance in our American agriculture,—and can be cropped annually, the only labor being to take off the crop. Its value in the market is about one-half that of English hay, and serves a good purpose in wintering animals. It finds its way into nearly every barn within ten miles of the marsh, and affords variety during the winter. When used about the barn it does not disseminate foul seeds to fill the farm with noxious weeds. For this reason it is a valuable ingredient in manure making. It has been estimated as high as six dollars per ton to plow under as a dressing.

CONCLUSION.

The undertaking, at best, would be a gigantic one, the cost would be immense, and the result would not warrant its accomplishment in the present state of our agriculture. Should our country ever become as densely populated as the Chinese empire, the project might become feasible, and, indeed, desirable. While land is as low in this country as at present much more can be realized at a far less cost. I think the present generation will not behold a scheme of this kind successfully carried out.

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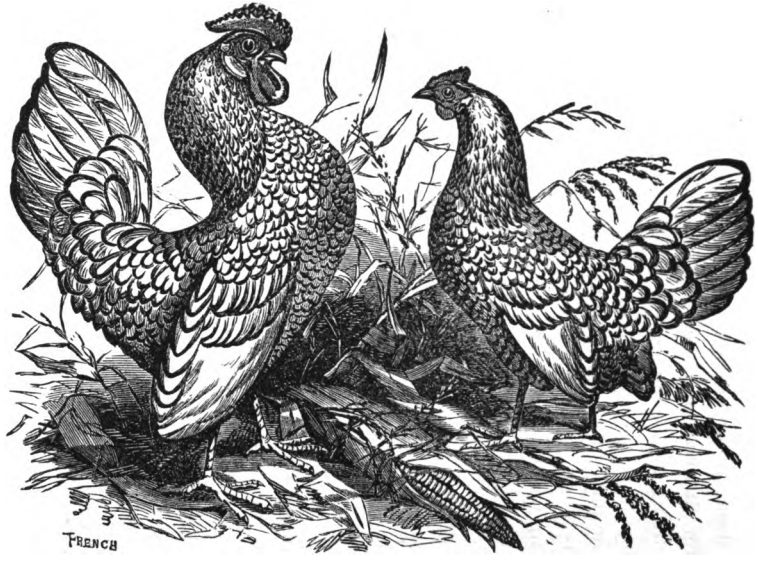

SEBRIGHT BANTAMS.

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GRASSES AND FORAGE PLANTS.

[An Address by George F. Beede, of Fremont.]

The subject for discussion, "The Grasses and Forage Plants," which has been assigned me to open with a brief essay, is a subject of great interest and beauty, as well as of the most vital importance to mankind.

The grasses adorn every landscape, the lawns, fields, hills, vales, roadsides, wherever we may turn our steps in labor or pleasure. Beautiful in their simplicity, they cover the earth as it were with a thick matted carpet of various hues, green, russet, or brown, as the seasons come and go in their fixed limits:

> "But chiefly thee, gay green!
> Thou smiling Nature's universal robe!
> United light and shade! where the sight dwells
> With growing strength and ever-new delight.
> From the moist meadow to the wither'd hill,
> Led by the breeze, the vivid verdure runs;
> And swells and deepens to the cherish'd eye."

Most of the animals that serve us, ministering to our wants and necessities, are sustained and nourished by their growth. So long as teams of horses and oxen are in demand for industrial purposes, roadsters for business or recreation, or the products of the dairy, beef and mutton in their different grades are required in such vast quantities for daily consumption, so long will the grasses of our fields, in the preserved form of hay, and of our pastures, be a question worthy of our highest consideration.

The importance of this subject demands our best thoughts, and will richly reward all the intelligence, skill, energy and perseverance we can command in cultivating and perfecting the grasses grown on our farms, whether for mowing or pasturage. Our long severe winters compel us to provide bountiful supplies of hay and fodder for the support of our farm stock. We are obliged to feed from the barn more than one-half of the year.

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The hay crop is *the* crop for the New Hampshire farmer. Compared with corn, which stands second, its money value is nearly six times as great, estimating corn to be worth one dollar per bushel, and hay twelve dollars per ton. The census of 1860 gives New Hampshire six hundred and forty-two thousand, seven hundred and forty-one tons of hay, and one million, four hundred and fourteen thousand six hundred and twenty-eight bushels of corn. Pasturage and hay together in this state are worth annually $12,000,000, at a low estimate. The advocates of the corn crop say if we double the crop, and we can easily do it with proper selection of seed and improved methods of culture, we shall add $1,500,000, annually to the wealth of the state. I as firmly believe we can double the grass crop in less time, with less labor and skill, and with less manure, which would add $12,000,000 annually to the wealth of the farmers of New Hampshire.

Being thus satisfied that the subject before us for discussion stands pre-eminent in importance as to its money value to the farmers of this state, I propose, in as few words as possible, to consider the grasses and forage crops in a practical point of view; to discuss in a plain way how we can secure the best results with the least labor and expense; how we can double our hay crop in ten years, without mowing over more acres than we now do.

At the present prices of labor and farm products, hired help is the moth on a farm; it eats up the small profits months before the farmer receives them, and there is no distinction made between skilled and unskilled labor; a policy that would ruin any manufacturing establishment in six months. Our employees demand one dollar per day and board, whether they have any knowledge of the work to be done or not, whether by their skill and intelligence they are worth two dollars or fifty cents to us. Perhaps one in a thousand can hold a plow so as to make thorough work; it would be rarer to find one that could prepare and sow an acre with grass seed and secure a smooth, perfect surface, which would show an even, beautiful catch, when the tender blades make their appearance.

If it were not for our wood lands, and the annual income from bonds, stocks, funds in banks and notes, which have mainly accumulated from the sale of our forests in years past, the majority of our farmers in this section of New England could not live in the style they are now living and carry on their farms with high labor and low sales of products three years, without becoming bankrupt:

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what would be true in such a case, is equally as sound now as far as farming is concerned: backed by our wood, lumber and money the fact is not so apparent, only to those that have not the woodland, or interest money.

I do not intend to convey the idea that money cannot be made by farming; far from it, for most certainly it must be the best business in the world; no other could stand up a week under such a load of waste, leakages, mismanagement, idle habits and ignorance of the best methods, as we daily witness among farmers. I only wish to insinuate, that take our farms on an average under the present system of cultivation, which, taken as a whole, is no system at all, it is not a paying operation in a business point of view to work them. It should be our study then to economize labor, apply the art and management of the merchant, make the expenses small and the profits large. In my judgment we can not do this so simply and successfully as by devoting our lands mainly to the cultivation of the grasses and forage crops.

We should manage them skillfully and intelligently, giving every branch of the subject close and careful thought, from the preparation of the ground till the harvest is stored. We must raise large quantities on small areas. Apply our labor and manure to our best lands. Feed properly and liberally to well-bred animals, so get rich returns for the food consumed. Save every particle of manure by using *dry* absorbents to secure all liquid portions, and to fasten volatile gases. Avail ourselves of labor-saving implements, take pains to find out and purchase the best. Use horses and oxen whenever possible instead of men. Never take two men to do a job that one can easily perform alone.

These ideas may seem to be opposed to the interest of the laborer. Just now we are in this fix; labor is either too high or farm products too low, farmers, laborers, and consumers are all grumbling. I can see no way, but cultivate better, raise much with little labor, teach, encourage and assist if need be, the laborer to go into the business as a producer himself, and try to set all classes right; but this is another question.

Dr. Loring, of Massachusetts, at the farmers' meeting at Manchester last winter, seemed to deplore that with all the aid science and thought could give the farmer, there is not yet any law, rule, or system to guide us in the management of our farm operations: that was the sense of the idea, but not in the eloquent words of the Doctor.

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Now it appears to me that the cultivation and management of the grasses comes nearer to such a result, than any other branch of husbandry, with which I am acquainted; we have all the labor-saving implements required to prepare the soil, and secure the crop; we can mow, ted or turn, rake, and pitch with our horses: as it needs no tending in its growth, I can see no reason why we cannot systematize our operations, and lay down rules, if it is desirable, to grow and harvest hay. I admit what would be the proper plan to adopt under certain circumstances, would not answer under others; dissimilar soils need a different treatment; what would be admirable for clay would work bad for a sandy loam, or mud meadow. It seems to me that the time will be long in arriving when we can lay down any precise, general law or system, which we all can blindly follow and secure uniform and satisfactory success, but I do think that any intelligent farmer can so observe, study, and experiment, if need be, with the soil of his own farm, and in the course of a very few years plan and adopt a system of management for his hay crop that will not disappoint him; a system so perfected and simplified that it will be safe for him to follow, and if persevered in will annually yield him a bountiful harvest of the best of hay; varying only in amount with the influence of the seasons, and other elements over which he has no control.

I shall not recommend any fanciful theories or practices of my own or borrowed from books or papers, but speak the simple facts and results obtained in my experience in the field for the past twelve years. I think I have a little authority to make the assertion which I did a few moments ago, "that we can double our hay crop on the same area in the course of ten years," for I have made the experiment successful in the town of Fremont, and I am convinced that I can double the production on the same tract of land again in the same limit of time. The farm was not run down at the commencement in the general acceptation of the term, and probably averaged about a ton of hay per acre to the upland mowing. I have faith to believe what has been done once can be done again under like favorable circumstances, bearing in mind the limit of production which the soil is capable of sustaining; also I can see no reason why others cannot do equally as well with an equal chance.

Before detailing the practices that have brought about this fine result, we will examine our subject a little more minutely, so that

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we can come at a more intelligent understanding of it, and what is desirable to accomplish. These facts are naturally first presented to our attention: some kinds of grasses are better than others; our best farmers cut from two to three tons of hay per acre, while by bad management others do not average one-half ton per acre on an equally good soil naturally. We wish to know which are the best kinds to seed with, and how we can improve the cultivation and management of our grass fields so as to bring up or increase the average crop so that it will equal the results obtained by our best farmers.

DESCRIPTION OF A FEW COMMON SPECIES.

There are many known species of grasses, but comparatively there is only a few of them cultivated, and with us fewer still which are highly esteemed. The limits of this paper forbid a scientific description of the minute parts of the flower, by which alone the numerous species are accurately distinguished from each other, neither would it be profitable for this occasion. There are a few general terms, however, that every one should understand. For example, the heads of wheat, rye, or herds-grass, growing in an oblong, compact form, is termed a spike, and the loose, spreading head of oats, or red top, is called a panicle. The spikelets are the small spikes on the panicles, often consisting of several seeds and chaff. A spike is also composed of spikelets, as in herds-grass, but are more crowded together. I will briefly describe only those which are of an agricultural value to the progressive farmer; others may be good, but we want only the best, and the best as to quality also yield the largest product; if there are any better they have yet to be tested and introduced.

Herds-grass or Timothy. The flowers grow in a cylindrical spike varying from one to ten inches in length; spikelets, compressed; leaves long, flat, rough, with long sheaths; roots fibrous, often slightly bulbous, and perennial, that is, they live more than two years. Common consent places herds-grass at the head of the list of cultivated grasses. It is the best every way, the most valuable, and more especially so for hay. It possesses a larger percentage of nutritive matter when compared with other grasses, and produces a heavier crop. The only objection to it is, it does not make a good second crop if cut late in the season, but this depends much upon the condition and moisture of the soil.

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It is easily cultivated; all good farmers sow at least one-half bushel of seed, which gives a heavier crop and finer, softer hay than a less quantity. When allowed to mature it yields from ten to thirty bushels of clean seed per acre on rich soils, and when cut for hay will produce from two to four tons. It is a native of New England and takes its name from Herd, its supposed discoverer; further south it is called Timothy, from Timothy Hanson, of Pennsylvania, who largely cultivated and introduced it to notice.

Red-top. The flowers are in a loose, open panicle; the spikelets are one-flowered, or one-seeded; stems smooth, round, slender, and polished; the whole head has a reddish purple color, very conspicuous when growing in quantity in mowing fields; roots creeping and perennial; it forms a dense sward and the surface which makes it well adapted to sow with herds-grass, as the roots of the latter are left quite bare after cutting. This is a very valuable grass, excellent for permanent pastures, fine for the lawn, and sown with white clover, forms with weekly mowing a beautiful green carpet, as soft as velvet. It is of English origin, and has been cultivated in this country for more than a century. When first introduced it was called simply English grass, and by the English, fine bent. When grown on a poor, thin soil, it seldom reaches a foot in height, and has a lighter color. In some sections it is called fine-top, Rhode Island bent, Timothy and various other names.

Orchard grass is recommended very highly for pastures, enduring drought well, and growing in the shade better than other grasses, hence its use in orchards and its name. It is said to produce more pasture than any other known grass, but it is too coarse for hay.

Fowl-Meadow, or False Red-top. This grass has a large, loose panicle, and small spikelets of a reddish-brown or purple cast, giving it a resemblance to red-top, but it is readily distinguished by having several flowers in the spikelets, while red-top has one-flowered spikelets. It is perennial, and grows in wet meadows. It is the best of all grasses for wet lands, making a hay of excellent quality, which may be cut late in the season without losing its value.

Blue-joint grass is also a valuable grass for low grounds, being both nutritious and relished by all kinds of stock. It grows from three to six feet high, and, on soil adapted to it, yields enor-

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mous crops. It deserves more attention than it has yet received from farmers and writers. The almost universal practice of farmers in this vicinity has made herds-grass and red-top, with red clover and Indian corn for forage crops, a complete list of our favorite species for upland cultivation. The practice is well founded; analyses of chemists, and the experiments of practical feeders agree that these are richer, taken as a whole, in flesh, fat, bone and heat producing principles than those less known.

White, Southern and Sweet corn are the best varieties to cultivate for feeding green in the summer when the pastures begin to fail, or to cure for winter use as a substitute for hay.

Oats make a fine forage crop. If cut when the grain is in its milky state, the stalks and leaves green, it nearly equals English hay for fodder, either green or cured.

Clover, which is not a true grass but a forage plant, is one of the most important plants that we cultivate. There are two species well known, red and white; of the former there are two or more varieties. The northern is large, coarse and late flowering, yields heavy crops but of poor quality; the western or southern is smaller, finer and earlier flowering; this is much the best for hay; the white is adapted for pastures and the lawn.

Alsike clover has been lately introduced, and is claimed by some to be very valuable. It has a soft branching stalk with numerous oval flowers, of a pinkish color, and grows about eighteen inches high; roots, fibrous and perennial. It is best adapted to a moist soil. I have a half acre of it, sowed last season; from its appearance I should think it would be excellent for hay, but will not yield so heavy a crop as the western red; it will not grow rapidly enough after being cut to make a good second crop, which is enough to condemn it. I doubt whether it will prove valuable enough to be worthy of general cultivation. A few years' trial will decide the matter.

Value of red clover. Are the enriching properties of red clover fully appreciated by our farmers? We will examine the plant more minutely, and suggest, in the proper place, methods to utilize its value to the farmer as one of the best foods for his animals, as making a richer manure than any other hay consumed, and as a renovating crop to all lands whether in a high or low state of cultivation. All the varieties of the red clover strike one

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large central root, called the tap-root, deep into the soil, thoroughly pulverizing it, leaving it in the best mechanical condition possible for after crops, whether it is to be succeeded with other grasses sown with it, or plowed down as a green manure for tillage or grain crops. This loosening of the soil exposes it to a freer action of the air, which is very essential to the growth of plants. The tap-roots of clover, by going so deep into the earth, pump, as it were, the mineral fertilizing matters of the sub-soil to the surface, which has become deficient in these properties by the exhausting crops taken from it; or in other words, transferring the lime, salts, alkalies, phosphates, etc., in a progressed form, from the inexhaustible stores so lavishly provided by nature in the lowest strata of the soil to the surface, where the rains, dews, air, and the processes of culture so amend them that they are available for the roots of plants.

It is difficult to test any other species of grasses than those generally cultivated, unless we save the seed ourselves. If we buy it in the market very little of it will germinate, unless it happens to be fresh, which is rare; the demand is so small the stock in the hands of dealers is by age worthless. This, at least, has been my experience.

White-top and Witch-grass. Before leaving the species it may be well to notice two grasses that largely predominate in our fields. I refer to white-top and witch-grass. They are of little or no value to the agriculturist, and should be regarded as weeds to be eradicated. Their presence denotes poor culture, and generally an impoverished condition of the soil, more especially the white-top. This is one of the lean kind which will not respond to generous feeding. Give it a heavy top-dressing of rich manure and it will only hold its own, yielding from one-half ton to a ton of hay per acre. This can be easily crowded out by high manuring before seeding the ground with grass seed, and a judicious after management. The other is a pest, an eye sore, a thorn in the flesh, to the farmer who tries to get the most and the best from his hay harvest.

It is an expensive and difficult subject to deal with in tending tillage crops. To remedy, break up with wide, deep and flat furrows as late as possible in the spring and it will not be so troublesome that season, then plow late in the fall exposing the bare roots to the frosts of winter; it will check it materially, and if the ground

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is manured heavily and planted with a vegetable crop, such as mangolds or cabbages, the next season, and kept clean, it will be snfficiently subdued for all practical purposes. To give full justice it should be said that if cut early these grasses make a good quality of hay; those that raise large quantities of such hay would naturally overrate its value when compared with herds-grass.

Nutritive value. In passing to the management and culture of grass lands and forage crops, it would be well to take a hasty glance at the nutritive value of hay compared with some of the most common vegetables and grains. These values have been ascertained by repeated experiments in feeding by several eminent European agriculturists, and are undoubtedly very nearly correct. The figures I give are the average results of the authorities consulted. Best cured English hay is taken as a standard, one hundred pounds of which is equal to about ninety pounds of clover hay, to two hundred and fifty pounds ruta-bagas, to three hundred pounds mangold-wurtzels, to two hundred and fifty pounds carrots, to two hundred pounds of potatoes, to forty-five pounds beans or peas, to fifty-five pounds Indian corn, to sixty pounds barley, to sixty-five pounds oats.

If we apply these equivalents to the product of an acre of good fair land in each crop, we find the statement thus: We will assume for a standard an acre of good English grass, which yields two tons of cured hay; an acre of clover producing two tons would be worth two and two-ninths tons of English hay for feed purposes; an acre of ruta-bagas. at the rate of eight hundred bushels per acre, which is a fair estimate, would be equal to eight tons of hay; an acre of mangolds, twelve hundred bushels, and some get as high as fifteen hundred bushels per acre, would balance ten tons an acre of carrots, eight hundred bushels, eight tons; an acre of of hay; potatoes, two hundred bushels to the acre, three tons; an acre of Indian corn, eighty bushels and valuing the fodder worth an acre of hay, six and one-fourth tons.

I would like to compare cured corn fodder with hay, but could not find any statistics to quote from. I think the comparison would be favorable, and the amount that can be grown on an acre is very great, reaching as high as eight to ten tons of cured fodder on well prepared ground. It would be interesting to me if I could find the figures to exhibit an acre of cabbages with the root crops; the product is large, from twelve to fifteen tons of solid

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heads with as much weight of loose leaves to the acre. I will give, however, a single experiment of my own as to their value for fodder. Four years ago last winter I fed some four tons of cabbages, solid heads, to four beef cows, and also to four milch cows that calved early in the spring following. I fed no grain or meal to either lot. The beef cows were fed clover hay, the others meadow hay and barley straw. I am confident the cabbages netted me $10.00 to each beef cow, and I sold $60.00 worth of butter from the milch cows, a single pound of which would not have been made if the cows had only the dry hay and straw for food. Butter was worth forty cents per pound. Beef, $12.00 per hundred weight. These figures give a ton of cabbages worth $25.00 for producing beef and butter at the prices named.

Manurial value. There is one other consideration closely in connection with the nutritive value of food for animals which is worthy of thought, as it shows what crops are most valuable to consume upon a farm to enrich the soil when the manure is returned to it, that is the manurial value of the different kinds of food. We all know the exceedingly rich qualities of manure made by fattening animals, those that are largely fed on concentrated food; also the nearly worthless manure made from straw and bog-hay, which will hardly pay to cart to the field. According to the estimated values of the manures made by animals consuming the various foods named, prepared from their chemical composition, by John B. Lawes, of Rothamstead, England, they are as follows: (I would remark, however, that the composition of the foods was probably correctly ascertained, but the estimated money values of the manures must be taken relatively. The figures also are in gold and based on the prices of commercial manures).

The manure value in the consumption of a ton of English hay is $6.43; of a ton of clover hay, $9.64; of wheat straw, $2.68; of barley straw, $2.25; of oat straw, $2.90; of a ton of mangold-wurtzel, $1.07; of ruta-bagas, $0.91; of flat turnips, $0.86; of potatoes, $1.50; of carrots, $0.80; of parsnips, $1.14; of a ton of linseed cake, $19.72; of cotton seed cake, $27.86; of beans, $15.75; of peas, $13.38; of Indian meal, $6.65; of wheat, $7.08; of barley, $6.32; of oats, $7.70; of malt, $6.65; of fine feed, $13.53; of middlings, $14.36; of shorts, $14.59.

I will briefly contrast the manurial value of the product from an

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acre of a few common crops, when consumed by animals. The manure from an acre of English hay, two tons, is worth $12.86; an acre of clover, $19.28; of ruta-bagas, $18.20; of mangolds, $32.10; of carrots, $16.00; of potatoes, $9.00; of Indian corn, $28.82. Governed by the cost of the food, the manurial value is greatest in feeding cotton seed cake, wheat bran, middlings, fine feed, and clover hay in the order named. Taking into account both its great yield and its value for manure, mangold-wurtzels is the root crop to cultivate above all others to feed to stock as a substitute for hay. It also leaves the ground in a perfectly clean, fine, rich condition for the grain and grass crops which naturally follow it.

Influence of the season or climate. We will now consider for a moment the influence the seasons or climate have upon the quantity and quality of hay and grass, which can be stated in a very few words. The conditions most favorable to grow and perfect an extra crop of hay, both as regards quantity and quality are these: The snows of the previous winter should come early and late, to secure a deep covering throughout the winter to protect the roots of the grasses, and promote a quick, early start in the spring; the next requisites are plenty of *moisture* and *sunshine* during the three growing months of May, June and July. The rains should be abundant and frequent enough to prevent any tendency to drought; if there is too much moisture with dull, cloudy weather, the quantity is increased at the expense of the quality; in continued dry weather the hay is richer, but much less in quantity. Cold open winters, and ice forming on the surface of the bare ground are the chief causes of killing out the grasses in winter. A severe drought, such as we experienced last season, dries up and kills the tender grass roots on newly seeded lands. The cultivation and management to be suggested, in a measure, controls the influence of the season.

Methods of Culture. The first thing that demands our attention in the culture of the grasses is the preparation of the ground to receive the seed. Heavy crops of good grass depend upon the mechanical condition of the soil, the richness of the mold, the previous crop and its management; this should not be an exhaustive one; it ought to have been well manured and the tillage clean to give the best results.

No one can get far towards high farming without using fer-

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tilizers in liberal quantities and keeping the land perfectly clean of weeds. I mean by clean culture that no weeds should be allowed to mature their seeds. The outside edges should be looked after when tending crops as well as between the rows. The old adage "one year's seeding makes ten years' weeding," is more than true. Few farmers are alive to their own interest in this matter. I speak from observation. Every field overgrown with weeds is a standing and instructive sermon to the passer-by. Every intelligent man ought to know that weeds are *robbers* and *cheats;* they rob crops of the nourishment they need to bring them to perfection, and the farmer who fails to eradicate them when small cheats himself of his honest dues, the small profits on his labor for the season. All honest, true cultivators of the soil should have a righteous and unrelenting hate for weeds. Plowing and planting are expensive operations; it is a great waste to invest so much and then neglect to cultivate and till, a course which brings a harvest not worth gathering.

This company may think these remarks uncalled for. I hope that they may and go tell them to their neighbors, for I see acres of crops in the fine old county of Rockingham that receive no culture after planting; potatoes not hoed, consequently none to dig; small, stunted corn, without ears, cut for fodder; the kitchen garden, which should be the pride and ornament of every country home, however humble, smothered with weeds. But this has a discouraging outlook; we will return to more cheering thoughts,—the fresh turned furrows, the green, waving fields of June, and the busy, enlivening labors in the fragrant hay harvest.

I propose to detail the practices I have adopted as the *best* for me to obtain a satisfactory hay crop, and to make a few general suggestions for the management of grass lands. The soil of my upland mowing is a rather heavy brownish loam, neither inclined to sand nor clay, averaging some seven inches deep, resting on a yellow loam subsoil, with a very hard pan, somewhat clayey, at the depth of two and a-half feet. It is a portion of a ridge of land containing nearly sixty acres. It is similar to most of the ridge lands in this part of the state. The original growth was beech and maple.

Spring seeding. I plant one or two years after breaking up, never more than two, and apply the manure to the previous crop before seeding with grain and grass seed. If the land is not suffi-

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ciently rich to grow a heavy crop of grass I manure again when I seed down but do not recommend the practice, unless it is applied in the fall, as it stimulates the straw of the grain crop too much, and the yield is light in weight and measure. I plow in very little manure, spread it on the furrows and work it into the soil very thoroughly with the harrow and cultivator; so applied it has almost magical and lasting effect on growing plants. I endeavor to plow well, thoroughly pulverizing every part of the soil; this is secured on old ground by taking narrow furrows, say six or seven inches wide and about eight inches deep; judgment should be used as to the depths, and care taken to keep as rich soil as there is at the surface, it is not safe to bring up much of the yellow at a time; if deeper tillage is desirable do it gradually or use a subsoil plow which is better. The narrow furrows leave the freshly turned earth so nearly level that one passage of the harrow will make a smooth, even surface, without ridges or hollows. If a swivel-plow is not used, the team should make two "bouts," with the plow held lightly on the wing, so as to draw the soil into all dead furrows to make them level, also on the sides where there is an open furrow. Every farmer ought to be intelligent enough to appreciate the great beauty, comfort, importance and economy of a perfectly smooth mowing field; this cannot be secured unless the land is properly plowed.

For the first harrowing to level the land I use a coarse iron-toothed harrow,—an efficient harrow should have long teeth, not less than ten inches below the frame, pointed with steel and kept well sharpened; harrows with short, blunt teeth for most uses clog bad and make wretched work,—the grain is then sown and covered with a steel cultivator; the field is now gone over twice with a large iron-toothed, steel-pointed harrow, five feet square, the teeth, thirty-six in number, projecting ten inches on one side and three on the other side; by turning over the harrow and passing over the land, after the previous thorough working of the soil, it crumbles up and fines the small lumps wonderfully, and leaves it like a garden bed. The land is now ready for the grass seed; one-half bushel of herds-grass, one bushel of red-top, and ten pounds of clover, western red, is the mixture. It is finished either by rolling or with a heavy brush harrow; the former is to be preferred as the latter in turning is apt to drag the grass seed together, leaving some places bare of seed and others having too much.

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In passing I would encourage the use of the roller in seeding land to grass more fully. The small size of grass seeds indicates that they should be covered slightly, and that the ground should be in a fine, well pulverized condition; twice the diameter of the seed is a good rule to follow, with few exceptions, in covering all varieties of seed. One fourth of an inch is deep enough for the grasses, and a roller, in two sections, to avoid dragging the soil in turning, is the implement to do it just right. It not only covers the seeds, but it compacts the soil about them, presses small stones into the ground out of the way, and leaves less surface exposed to the action of the drying springs, thus securing more moisture to germinate the seed and support the fine delicate roots of the young plant. The larger stones should be picked before rolling or soon after the grain is cut, when they can be easily seen and the ground is hard to cart them from the field. It is a slack, untidy practice to leave them in small heaps or scattered about the field to dull the scythe or mower.

Seed light with grain and thick with grass seed to get a good catch and a fine quality of hay. Wheat and barley are better to seed with than oats, but when the oats are seeded light and cut green for fodder the grass does well. In cutting the grain great care should be taken to cut *above* the young grass plants. The leaves are the life and support of the whole plant; it cannot be vigorous if the tender roots just forming are checked in their growth; when exposed to the hot, burning sun of midsummer they will dry up and die, causing the proposed grass field to be a failure.

If it can be afforded, a mixture of pure, fine ground bone and plaster, mixed a week before using in equal portions, sown at the rate of four hundred pounds of the mixture to the acre, on the clover after the grain is cut, will increase the crop materially for several years as it is a lasting manure. By careful experiment I think it is safe to state that it will increase the crop from three to four tons of hay per acre in five years, and the entire cost would not be over eight dollars per acre.

Time of seeding. It is a question in my mind whether it would pay better to sow grass seed in the spring with grain, or to re-plow after the grain is cut and seed with grass alone in the fall. The grain dries up and exhausts the soil, smothers the young grass, and when lodged kills it out entirely, even if the grain is

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light it shades and retards the growth of the grass. When sown alone in the spring it would be well to prepare the land in the fall and sow the grass seed very early in the spring so as to give it a good start before dry weather comes on.

Fall seeding. I have always had more uniform success in sowing grass seed during the month of September than at any other season of the year; it has done as well later, till the last of October, except on land liable to heave bad with frost, and for the first crop.

One of the best methods to grow grass cheaply is to break up low moist lands after haying, plow deep with wide, flat furrows, apply to each acre eight cords of stable manure or rich compost on the furrows after they have been sliced up four inches deep with a Shares' harrow, or something like it, that does not disturb the inverted sod; mine is made from the steel plate of a mill saw, the teeth are shaped like Shares', tempered and bolted to the frame; it works admirably. The manure is well worked into the soil, first with a harrow to fine the manure, then a heavy cultivator to cover it; next use the fine-toothed harrow to secure the smooth level surface; sow grass seed, one half-bushel herds-grass, one bushel red-top, omit the clover to be sown early in spring on late snows; finish with the roller.

Grass on drained land. If the land is so wet that the wild grasses come in again after two or three years, the cultivation will not be satisfactory until they are drained. This is often done by plowing the land in beds with open ditches, but this does not give so profitable results as more thorough drainage, and tile draining is the cheapest every way for permanent work. The extra labor in digging the ditches for stone, laying and covering them, will more than pay for the tile, were the stones at the sides of the ditches.

In no way can hay be grown so cheaply, with so little manure, as on tile-drained land; to illustrate,—four years ago I drained two and one-half acres of low wet land, at the foot of a hill, with tile; put in the tile in the spring, planted corn which did well, even on the lowest part that was never flowed before, applied only six cords of green stable manure to the acre on the surface. The next season the top of the soil was kept so wet by continued rains that I did not plow it in the spring; during dull weather in haying I nicely turned under a very heavy growth of weeds, before

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they seeded, clover and red-top, which came in naturally; worked the soil thoroughly with harrow and cultivator, and sowed it with grass seed in September, without more manure, except a few places where the soil was thin and poor. This dry season I cut eight tons or more of cured hay in two crops on this piece of ground, where we did not get over one and a half tons before it was improved of poor lowland hay. The increase of the crop this year, if sold at market prices, would more than have paid for the outlay in draining, which was at the rate of $50.00 per acre. What a rush there would be among capitalists if there was an investment paying from fifty to one hundred per cent. annually; farmers have just such an investment in draining their wet lands and seeding them with the grasses, but there is no rush, no excitement, and our best lands lie unimproved, a barren waste, a disgrace to a wealthy, civilized, intelligent class of people.

Time of cutting grass for hay. The time of cutting grass for hay depends somewhat upon the uses it is intended for. It is best for young, growing animals and milch cows when cut before the flowers appear; for working oxen and horses, just after blossoming; the nutritive value is greatest when the rich, sugary, nourishing juices of the plant is beginning to be consumed to perfect the seed, which is as soon as the flowers disappear. All the grass cannot be cut at the same time. The wise, prudent course is to commence haying early, feed that cut first to young stock and cows, and the later cut to the laboring animals.

If cut early the second crop, which is an important crop, is much greater, and it exhausts the land less. This is not fully understood among farmers; late cutting, undoubtedly, causes grass lands to run out more than any one practice; I will not except close fall feeding, damaging as it is. Let a fine patch of herds-grass ripen its seed and the next season there will not one half as much grass grow on it as on the land adjoining which was cut earlier. I have been taught this from repeated experiments when saving grass seed. Generally farmers let most of their grass stand too late, often till the seeds are ripe, and the new fields, those lately seeded down are cut last, a ruinous practice; in three years the herds-grass and red-top disappear and the little stunted white-top occupies the land until it is broken up, planted and re-seeded. If such fields had been cut early in July the best grasses would have held out full three years longer.

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Clover is almost universally left standing too long; it should be cut in full blossom. The old rule, "When the heads are half brown," is a week too late, especially if any part of it has fallen down; if much of it lodges it should be cut at once if it is in the middle of June; should it remain flat a week it will smother and kill out the small tender plants of herds-grass and red-top, and ruin the field. Those farmers who practice cutting their grass late argue that there is more heart to the hay and that it spends better; the first part of the statement is a great mistake, the latter is true, and the reason is this: The sweet, rich juices of the grass, by the ripening process, is changed into a hard, wiry, dry, woody fibre, and the poor dumb beasts instinctively had rather starve than eat so unpalatable and unnutritious food, consequently it remains before them and lasts well. In the mean time the animals *live* on the fat and flesh accumulated on better fare before they came to the stables in the fall. They remind one in the spring of the boy who asked a man if he kept his horse on barrels. To the query, why? he replied, "The hoops are sticking out of his sides."

Height of cutting. It is well to cut the grass from year to year at a uniform height; if cut high one season and low the next it is much harder to cut and dulls the scythe and mower more. A medium height, say two inches from the roots of the grass, is best. Avoid cutting too close, to protect the grass roots in dry weather.

Curing hay. Hay is cured just right when it will keep without coming out musty in the spring, or it should be as green as possible and not hurt. Most farmers dry their hay too much in good weather, and too little after it has become wet by rain. Heavy grass cut rather green requires a day's more sunning than later in the season when it is riper and the heat greater. Clover should not be dried quickly as it crumbles the leaves and they fall off, which are the most valuable parts of the hay. It should be put into small heaps the same day it is cut, turned over and put into shape again the second day after, the next day open slightly, shaking the bottom well out, and after two or three hours' sunning cart immediately to the barn. The entire crop is thus saved and it makes a green, fragrant, excellent hay.

Other grasses should be managed differently. If there is more than a ton to the acre two days are required to make the hay. It should be heaped the first day; standing over night in the cock assists the curing process; the next day open and turn, giving it

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from two or six hours sun, as its condition varies, when it is ready for the mow. Salt should be used sparingly, more as a relish for the stock than to cure the hay, as there are no preserving qualities about it.

Harvesting hay. Unload hay and sharpen scythes in the morning; start the mower as soon as the dew is off; if hand-scythes are used commence mowing before breakfast; open early, turn early, and get in two or three loads in the forenoon, if possible, as showers are most frequent from two to five o'clock in the afternoon. Commence to rake with the horse by four, when the hay is warm; heap up at once, rake the litterings and have everything tidy before sunset. Farmers should provide all the wagons and carts that they have room for in their barns when loaded, in case of showers, and for the men to unload in the morning, when the grass and hay in the field is wet. Make every step and stroke tell, and three men can average four to six tons of hay per day, if the fields are near the barn, and they have good grass to cut.

Cost of making hay. When using hand-scythes and rakes, the cost of making hay would be from four to eight dollars per ton; by using horse power as much as possible, it will not exceed three dollars per ton. I have harvested hay several days in succession at the cost of two dollars per ton.

Mowing-Machines. Every farmer who cuts twenty tons of hay or more should use a mowing-machine. If the acres are few and nearly level a one-horse machine will answer all purposes, but for hilly fields and more acres the two-horse mower is indispensable.

As to their capacity to do work, I have cut an acre of grass in forty minutes with one horse; a fair average would be about seventy minutes; my experience with the two-horse machine is an acre per hour, and easy work for the team, which is fully equal to eight average men with hand-scythes, taking the grinding into account. Mowing-machines should be carefully cleaned, oiled, and housed in a dry place, when haying is finished. There is not much choice in machines. If a farmer buys a Clipper, Buckeye or a Wood, or any other first-class machine, that is faithfully made, uses it one season and gets familiar with it, you cannot convince him but that he has got the best machine in the world. Any of the best machines will perform perfect work much better than the hand-scythe.

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Rakes. Of horse-rakes I know of none better than the old revolving rake for smooth fields and heavy grass, and this is where we ought to cut our hay. It rakes clean, does not scratch dirt and dust into the hay, is cheap, easily repaired, makes rapid work, and leaves the winrow in good shape. I have not yet seen the rake I would buy to take its place. Drag-rakes are very useful to gather litterings, and to rake thin grass when we are unfortunate enough to have it in our fields. Farmers who sell their hay might prefer the steel-toothed horse-rake, mounted on wheels, with a spring seat for the driver, on the same demoralizing principles that govern the producers of Massachusetts, in selling *thin* milk and *sour* strawberries.

Tedders. I cannot speak very confidently of the practical use of tedding machines, having had no experience with them. From what I hear among farmers who use them, I should judge that they do not work perfectly; the draft is hard, and they will not turn or stir up hay well after it has been beaten down by rains; but for passing over the fields a few hours after they have been over with the mower, they answer a good purpose.

Hay caps, made of common stout sheeting, two breadths two yards long, sewed together, hemmed, with small eyelet holes in the corners, to receive small wooden pins to hold them in place, will pay for the first cost every rainy season, and if properly cared for will last a life time. They should be thoroughly dried and aired before packing away after haying.

Recipe for making hay. As we pass from the hay field, I will again call attention to one essential point, by giving an infallible recipe to make hay by, for those who wish to work by rule: if patented the "rights to use" would sell for ten dollars each, as the market goes among farmers for such rights; here it is free and very simple: "Make hay the last of June and the first of July when the sun shines."

General management of grass lands. We are now prepared to say a few words on the general management of grass lands; how we can succeed in keeping up the fertility of our fields so they will yield annually a heavy burden. We have the choice of three methods; first by frequent top-dressing; the second is to break up as soon as the amount of hay diminishes in quantity, plant with hoed crops one or two years and then seed to grass

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with grain; third, break up when required and re-seed in September. The first is a long rotation, the others short. The top-dressing is cheapest, simplest and most profitable. The rotation with hoed crops requires much labor, which is expensive, and large quantities of manure, to be successful. I have tried the three methods; the top dressing has proved most satisfactory. There is a slight advantage in plowing often in the fertilizing matter gained by turning under a grass sward, but it is not so important as the first view of the subject would suggest, for a sward that has received two or three liberal top-dressings is much richer when turned under than a bound-out sward.

Experience is often a hard schoolmaster. I made many mistakes before I hit upon the right course to adopt in managing my grass crop; the system of management which I have adopted, if a practice so simple might be honored with such a title, grew out of some accidental experiments to increase the hay crop; the lessons taught by failures were more valuable than those by success, and I have found it far safer to patiently grow, rather than undertake to jump into the art of a successful farmer.

Top-dressing grass lands. It does not require a very rich compost to give large returns in top-dressing grass lands. My way of composting for this purpose is of home-made materials, easily and cheaply manufactured. I prepare it as follows: during summer, as leisure occurs, I cart from twenty to thirty cords of loam, road-wash, muck, leaf mold, or the waste of charcoal pits, whichever material is most readily obtained, or a mixture of them, into the barn yard and spread it; the yard has a hard bottom, and is lowest in the centre. I then draw from five to eight cords, as near one-fourth part of the absorbents as I can judge, of rich manure from the barn cellar, which is evenly spread; this is the agricultural yeast to leaven the whole mass. I now plow and harrow thoroughly; if I want more compost I draw more materials, plow and mix as before. I afterwards plow and harrow two or three times at intervals of a few weeks, when the compost is ready for use. I prefer to apply it just before the fall rains, about the last of October or the first of November. It may be spread from the cart or laid in heaps and spread afterwards, which is the cheaper way, where there is plenty of help, but most men would spread it evener, which is a point worth considering, from the cart. I apply as near six cords of the compost to the acre as possible. After spreading I go over the field with a heavy brush harrow to fine

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the lumps and work the compost into the grass stubble out of the way of the scythe or mower next season. It protects the roots of the plants from the cold winds and exposure; gives the grass a beautiful early start in the spring, making a quick, luxuriant growth which shades the ground, keeping it moist in dry weather; it also acts as a mulch in the summer after the grass is cut and largely increases the second crop which is of much importance.

It will not pay to top-dress a bound-out sod; the compost should be applied before the best grasses die out or decrease much in their product, to give the finest results. I like to top-dress after the land has been mowed three years, then every other season till it is broken up again, and my rule is to let it run as long as it will yield abundantly and the wild grasses keep out. This method, or system, works admirably on moist, natural grass lands and reclaimed meadows. I could cite many instances from my farm record where by applying top-dressing the yield of hay has been doubled for three successive years, when the crop before the application was not more than a ton to the acre. I can in this way obtain four times as much profit from the same quantity of manure as I can by planting corn; my land, however, is better adapted to grass than corn.

Care of grass fields. All rubbish should be picked from grass fields in early spring, and a sharp watch kept to destroy large coarse weeds as they take room and nourishment from the growing grass, and dilute the hay.

Fall feeding. Feeding mowing lands in the fall is an injurious practice; if there is any amount of growth it is better to mow it and keep stock out of the fields entirely. When they are fed the droppings of the cattle should be beaten fine and well scattered in early spring. No good farmer will allow his fields to be touched with a hoof when the ground is soft in the fall or spring. Feeding mowing fields in the spring ought not to be mentioned; the farmer who practices it cannot be a thinking man, has not capacity or judgment enough to discern his own interest, and could not appreciate a better way if he was taught it.

Irrigation. Water flowing over grass lands is very beneficial to them, and should be looked after where it can be practised. We have hardly taken a step in this direction to increase our grass crop. The wash from the highways should be turned on to the adjoining fields. Wherever it is possible to secure a flow of water

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during the fall and spring floods over grass lands it should be attended to. Streams can often be turned from their natural courses and overflow several acres, which will increase the annual yield of the grasses growing on them many fold.

Permanent improvements, such as pulling bushes, filling hollows, leveling knolls, removing rocks, building walls, draining, plowing, and seeding low lands, should be commenced immediately after haying and finished without delay as leisure occurs. No more ought to be undertaken than can be completed in a thorough, workman-like manner. It is better to have a little well done, which will be earning an annual dividend, than more half finished gaining nothing.

Record of operations should be kept. The farmer who contemplates the improvement of his farm or grass fields should keep a faithful record of his operations. His plans should be fully matured, and executed with promptness and skill. It would simplify his work and economize labor to divide the fields into lots, designated by numbers, each lot containing as many acres as he wishes to break up each year; the work of the season will be concentrated, and more accomplished in less time, than if scattered about the fields. To talk the truth plainly these little patches are nuisances to the progressive farmer which ought to be abated.

The record for the hay crop can be something like this: First item, the number of lot; second, state the years it has been mowed; then charge to it the interest and the taxes on the land, and the cutting of the hay; credit it with the number of cocks of hay, be particular to make them from year to year as uniform in size as possible; estimate the tons, if it is not convenient to weigh; strike the balance which will give the profit or loss on the lot; note when it is top-dressed and charge it to the next crop. When the lot is in tilled crops keep an accurate account of the cost and yield and find the balance as before. A record thus kept for a few years will show what crops and methods pay best, in what direction to enlarge the business, or to contract; it will be to the farmer what the ledger and balance sheet are to the merchant.

Pasture lands. I have designedly omitted to discuss the improvement of our pasture lands. The greater portion of them, in this section of New Hampshire, are by nature, circumstances, and the habits of the people more fitted for the growth of wood and timber than for pasturage. It would be a vastly better paying in-

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vestment to let the bushes grow than to cut them to obtain the scanty herbage which the land will yield. To illustrate: It takes from five to six acres on the thin soil of most of our pasture lands to poorly support a cow for five months, while an acre of land well enriched and cultivated will produce enough to keep a cow the entire year in good condition. Our aim should be to preserve the forests, drain, reclaim, improve, cultivate and enrich our best lands, meadows, and low lands which have received the wash and fertility of the hills for ages. The keen glance of Emerson recognizes this fact in his charming essay on farming when he says: "That the last lands are the best lands."

I will repeat four of the most essential points to observe in the cultivation of grass lands:

1. The soil should be thoroughly prepared, drained and well enriched.
2. Thick and even seeding.
3. Early cutting.
4. Frequent top-dressing.

Every farmer should hold fast to this one indisputable axiom: "Without continuous manuring there can be no continuous productions." The aim should be to get a full, remunerative crop from every cultivated acre at each harvest. We manure for the future crops too much, for the present, too little. We lock up, as it were, a part of our best capital. It has been often and well said that the manure heap is the farmer's bank; its funds should be turned to account, drawing interest as quickly as possible. "The nimble sixpence is better than the slow shilling."

I would like to exhaust my grass lands each year by cutting five tons of hay per acre, in two crops, from them; return the fertilizing elements, drawn out and carried away, by top-dressing and exhaust them to the like amount next season; so continue till they become sod-bound and require to be re-seeded. The difficulty is to make a beginning. Old methods and predjudices have become fixed habits which gird us about like steel bands riveted, not to be easily shaken off. The first start once made, an enthusiasm will be enkindled, higher aims cherished, more ambitious plans developed, inspiring new life and energy into the dull routine of ordinary farm life. The old homesteads will soon get back their virgin fertility and more. Increased productions will give increased means and greater facilities to make still further improvements, to bestow better and more skillful culture.

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The greatest improvement of all is while the land is being reclaimed the man will be renovated; increased knowledge "will enlarge and quicken his mind, extend the field of its vision, expanding its sphere of thought and action; in this way its powers are strengthened, its conceptions multiplied and vivified." It cultivates energy and decision of character to work from a well digested plan; it exercises man's prerogative right to be master; his mind should be so full of expedients, so rich in resources, that his lands, stock, labor and implements will be plastic materials in his hands to shape and fashion as his will and reason dictate. Energy, with a well balanced judgment, makes all the difference there is between thrift and poverty, and no occupation can be satisfactory unless it brings pecuniary success. But the stirring words of Buxton are much better than any I can give to the point: "The longer I live the more I am certain that the great difference between men, between the feeble and the powerful, the great and the insignificant, is energy, invincible determination, a purpose once fixed, and then death or victory. That quality will do anything that can be done in this world; and no talents, no circumstances, no opportunities will make a two-legged creature a *man* without it."

Such improvement of the land and man will make bright, sunny pictures of our rural homes, with the well kept lawn ornamented with a few choice flowers, shrubs and shade trees in front, hedges and clusters of evergreens for shelter; surrounded by broad, smooth, beautiful grass fields; the kitchen garden, orchard and extensive forests filling up the back-ground, where reign domestic content and worldly prosperity. This result would most happily solve the question that an educated man whose only capital is his farm, stock, labor and brains, with the assistance of a loving, intelligent wife, *can* secure a pleasant, comfortable, if not an elegant home and *make* a living by farming.

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PLANT LIFE.

[Address by William H. Hills, Esq., of Plaistow.]

I have been requested to occupy a portion of your time in discussing the subject of "Plant Life." I shall use the term *plant* in its broad and general sense, including trees as well as the smaller species. This subject would be a good text for a series of lectures, and I trust I may be excused for the absence of method in its hurried treatment.

The world is teeming with vegetable life; the air we breathe is impregnated with it; it forms a carpet for our footsteps from infancy to old age. On every hand we behold it, but are too often unmindful of our indebtedness to it in a thousand forms. Without it the landscape would afford us no pleasure, the air would become unfit for use, and animal life must perish.

All organized matter is said to be composed of a collection of cells,—little globular bags, filled with liquid or solid matter. Some plants are composed of a single cell, like that which sometimes colors red the snow of the Arctic and Alpine regions. We are told that bakers' yeast is composed of one-celled plants, and it has been estimated that in some instances these cells are formed at the rate of three or four hundred million per hour.

British fungi alone, as classified by botanists, amount to more than two thousand five hundred distinct species, outnumbering the species of flowering plants by more than one-fourth. It should be borne in mind that this order of plants, with a few exceptions, are microscopic, and not commonly regarded as plants at all.

If you subject a leaf of any plant affected with what is known as mildew or rust to inspection under the microscope, it will be found that what has long been regarded as a disease is in fact a vegetable growth. From the pores of the leaf—too small to be

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perceived by the unaided eye — you will find proceeding a plant, perfect in all its parts. These are vegetable parasites, feeding upon other plants, sucking up and poisoning their juices, destroying their vigor, producing premature death and decay. Rust, mildew and mould are of this class. The same is true of the puff-ball, oak-apple and mushroom, with the toad-stool that grows in a single night to the size of a fashionable sunshade. They are plants of a low order, but not to be despised and passed over, as they play an important part in the vegetable world. Many of these are extremely poisonous, and destructive alike to vegetable and animal life. Their growth, under favorable circumstances, is rapid and wide spread, as may well be supposed when it is known that the smoke, as it is called, from the puff-ball, and what is known as smut in our grain fields, is but the spore by means of which propagation takes place. It has been ascertained that some of the most troublesome species of this class only vegetate in a temperature above forty degrees, and that their growth is much promoted by a close, warm and moist atmosphere.

Since the creation of vegetable life on the earth most plants have been produced from seeds, but this is by no means true of all plants. The mosses, sea weeds and ferns neither flower nor bear seeds. Yet they have means of reproducing and multiplying their species in a wonderful manner. Other plants are perpetuated and multiplied by bulbs and tubers as well as seeds. This is accomplished in many cases without our aid, but the skillful cultivator has devised other methods of multiplying desirable species. Take the lily for example, the bulb of which is made up of a collection of scales imbricated or overlapping each other. These scales may be torn off one by one, and, if properly treated, will each produce a perfect plant. The common potato may be grown from seeds, tubers, parts of tubers or cuttings with perfect ease, as is well known. It may not be so generally known, however, that cuttings will produce tubers of immense size, often much larger than those produced in the ordinary way. It is, perhaps, hardly fair to make this statement, as it conflicts slightly with the theory of the learned agricultural doctors, who tell us that medium-sized whole tubers always produce the best results.

But success does not depend so much upon the quantity taken as the foundation of future plant growth, as upon other conditions. The largest trees of our forests are produced from comparatively minute seeds. The seed of the American elm is about

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the size, and much resembles, that of the parsnip, while the seed of the pine, when its wings are clipped, is less than half the size of a grain of wheat. If we take the smallest twig of a tree and subject it to the proper conditions of heat and moisture, it will strike root and grow to the full proportions of that from which it was taken. In skillful hands a single leaf may be divided and made to strike root, each half producing a perfect plant.

We sometimes think that plants are loth to grow; just the opposite is the fact. They are constantly striving to multiply and perfect their species, and the different ways in which this is manifested, and by which it is accomplished may be, and often is, of great practical value. By the process of grafting we cause the wild apple tree to produce a fruit fit for the table of an epicure. The horticulturist, by the use of buds, changes the character of a thousand worthless seedlings in a few hours. Almost every bud of the vine, the currant, and other fruit bearing plants, may be made to produce a new plant having all the characteristics of the original. By the use of slips and cuttings the florist multiplies, *ad infinitum*, the choicest and most tender varieties of flowering plants. These are only a few of the methods that man has discovered for aiding nature in her efforts to promote and sustain plant life. The advantages of these methods are, that by them, worthless varieties are at once changed to those that are valuable, and those that possess superior merit are multiplied ten thousand fold.

In propagating plants from seeds the tendency is back to the original or wild state. Only one plant in a thousand will be superior, or even equal, to the original; and it is only by the most careful selection of seed that the farmer is enabled to maintain the standard of his field crops. If by chance, or in obedience to some unknown law, seed produces a plant superior to the original, it may be perpetuated and multiplied by some one or more of the methods above named. To these methods we are indebted for the wide dissemination of our most valuable fruits; and the choicest ornamental and flowering plants of our gardens and conservatories would soon become extinct, but for the skillful manipulations of the gardener and botanist. Many plants have become so changed by art as scarcely to be recognized by the incurious observer. Who would recognize in the splendid double rose flowered portulaca, which we cultivate with such pleasure, that pest of the field and garden, the common purslane? We should hardly recognize

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in the single wild rose of the way side the parent of the fine double varieties, of every shade, that beautify our gardens and pleasure grounds. It is a curious fact that wild flowers are never double, and equally curious that double flowers seldom produce seeds. Most of our finest ornamental plants are chance seedlings, or what are called sports, and have been perpetuated by other means than by seed propagation. It is true that the seeds of single flowers will sometimes produce double flowers, but only when the seeds have been fertilized by the pollen of those that are double. This subject of fertilization, in skillful hands, might be made the text of an interesting and instructive address. It is of much importance to the agriculturist. The bee, in the collection of its stores, enters the flower of the vine, passes innocently to that of another, and the fine Marrow or Hubbard is at once ruined. Our friend Walker plants his corn with the utmost care. Having selected the best seed for a series of years he hopes to take the Lyman prizes for a long time to come; but a neighbor, over the way, who knows little of improved seed, or good husbandry generally, plants an inferior variety just when the prevailing winds of summer will scatter their pollen over our friend's growing crop. The result is, that in a year or two at most, the premium crop becomes a failure, much to the chagrin of our friend Walker, and to the delight, it may be, of his neighbor over the way.

But let us return to the subject of seeds and consider, briefly, a few of their peculiarities. The abundance of seeds that nature has provided must have attracted the attention of even the most casual observer. They are scattered everywhere with a liberal hand. It is intended that there shall be no failure of the crop. The trees of our forests, such as the elm, pine, linden, fir, maple, spruce, etc., are provided with the means of distant flight. They literally take to themselves wings and fly away. The elm scatters its seeds in spring, and so thickly as almost to cover the ground; while the pine, and other conifers, ripen their seeds in autumn; and this has been found to be the proper time for their sowing.

So with the plants that we nick-name weeds. Their seed-bearing propensities are quite remarkable. Our seasons are always favorable to the production of weeds, and their seeds are of the best quality. They require no steep, or coating of gypsum or ashes to ensure their germination. The young plants grow and flourish without transplanting or cultivation. They appear to be

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adapted to all soils and climates, and need no specific fertilizers. No premium has ever been offered for the best varieties or largest yield to the acre. Yet they live, only asking to be let alone, and spread, like the Chinaman, in spite of legal enactments and organized efforts for their extermination. It has occurred to me that if some society, managed on the principle of the agricultural horse-trots, should take them under its patronage it might result in their utter extermination. Otherwise the attempt may as well be abandoned.

But what is quite interesting is the fact that every seed, so far as we can discover by the aid of the microscope, or by closely watching its development in the process of germination, contains, in embryo, the rudiments of the perfect plant. This may be regarded as a fanciful theory by many, but it is quite as reasonable as to suppose that the vegetation of every seed, and the subsequent growth of the plant is a new creation; and much more when we recall the fact that cross fertilizing, while it has no perceptible effect upon the appearance of the seed, is plainly manifest in the hybrid product. So if weaker or unhealthy seed is used the effect is plainly manifest in the subsequent growth. This fact is too often overlooked by agriculturists. It should be regarded as a fixed law that a healthy, vigorous plant can never be produced from stock the vitality of which has become impaired by age, disease, or otherwise. The vitality of many seeds is soon lost or diminished to such an extent as to preclude the possibility of subsequent healthy growth. A plant grown from seed wanting in vitality, either from age, or any other cause, will be deficient in vigor in spite of special fertilizers and plant doctors. The chemists, with all their skill, can give us no prescription by the use of which an old seed can be rejuvenized. It is hardly necessary for me to suggest to you the importance of selecting not only seeds of the best varieties, but also the best seeds of each variety in their best condition. The same care should be used in the selection of tubers, bulbs, scions, buds, cuttings, or whatever may be used as the foundation of a new growth. Diseased tubers, or apparently healthy parts of diseased tubers, should always be discarded. Scions and buds ought never to be taken from trees lacking vigor, and cuttings of unhealthy plants should always be rejected. I have often seen ladies who, anxious to perpetuate a variety of some favorite plant, were vainly endeavoring to do so by cuttings taken from the original in its last dying moments.

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As well might they attempt to perpetuate their grandmothers in the same way. All the conditions of successful propagation by cuttings are wanting in the case cited, viz: youth, health, vigor. The cuttings of most soft wood plants will strike root in common sand at sixty-five degrees Fahrenheit, with as much certainty as grains of corn would vegetate under like treatment. At a temperature of fifteen degrees higher or lower the attempt would be a failure. The conditions to be observed are that the cutting must be healthy, and so young and tender that it will break on being bent, and it must never be allowed to wilt for want of moisture. The temperature should not vary more than five or ten degrees in either direction from that indicated. Yet this rule does not always apply, as tropical plants require ten degrees more heat, while those of a hardy nature, such as the carnation, are more surely propagated with ten degrees less.

I refer to this matter mainly to show the importance of understanding the laws that govern plant growth, and the absolute necessity of observing them. It is useless to plant corn in November or cucumbers in March. It is a matter of common observation, I have no doubt, that many plants denominated weeds do not make their appearance till settled hot weather. Their tardiness is not owing to a lack of seeds in the soil, for that was sown with a bountiful hand many months before; but the scorching suns of July and August were wanting, to start it into active life. Every plant has a nature, so to speak, of its own. It is stamped with its own image in seed, root, leaf, flower and manner of growth. These laws are so unvarying that the botanist, on examining a seed that he has never seen before, is nevertheless able to inform us what kind of a tree or plant it will produce. If it may be divided into halves, like the apple seed or the bean, it will appear above the soil in the process of growth, while if it is a solid seed, like a grain of corn or wheat, it will remain below the soil. In one case it will produce what are termed interlaced veined leaves, and in the other the veins of the leaf will run parallel to each other, as in the grasses, the corn plant and the palm tree. One of the plants will always produce branches, the other never. So of the bud; the shape, color and locality of the bud or the twig indicate the species to which it belongs. Give the anatomist a single bone and he will construct the other parts of the entire skeleton. So give the botanist a seed or bud and he

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has in his mind at once the leading characteristics of the full-formed plant.

Let us for a moment consider the question, How do plants grow? or in other words, How is the life of the plant sustained and its growth promoted? The answer is that the plant selects, in liquid form, its appropriate food from the soil in which it is located; that this liquid substance which we call sap passes up through the pores of the wood to the leaf, where it undergoes a change like the blood in the lungs of the animal, when it returns and is deposited upon the outside, beneath the bark, and this deposit becomes hardened, and constitutes the season's growth. How simple this process appears, yet it is not free from mystery. By what sort of instinct — I know of no better word to use — are trees and plants enabled to select, each for itself, just the food necessary for their growth? The oak upon the hill-side and the shrub beneath its shadow select their appropriate nutriment with never-failing skill. We find the wild and cultivated plants growing side by side, the one characterized by its beauty, and the other by its ugliness; one filling the air with its delightful fragrance, the other with its disgusting odor; the one a deadly poison, the other its antidote.

But the selection of appropriate food, by each variety of plant, is not the only mystery attending plant growth. By what power or influence is the sap carried to every part of the tree in due proportions? The amount of sap carried up from the ground, in case of a large tree or vine, is by no means inconsiderable. If a vine is severed in spring many gallons of sap escape, much more than would have sufficed for the growth of the vine. So of our larger forest trees. By what power is this large quantity of sap carried to the topmost twigs? Not by suction, surely, for by atmospheric pressure we can only raise water thirty-three or thirty-four feet. Not by lifting or forcing, surely, for there is no power above or below, by which the operation can be performed. It may be aided somewhat by capillary attraction, but this principle fails to explain fully the phenomenon, as capillary attraction would be quite as strong in the dead tree as in the living. We also know that the sap is active where the tree has no top, as we see it escaping in large quantities from the stump of the birch and maple that have been cut during winter. It may be said that this is caused by some power exerted at the root; but how can we account for the fact that the yellow pine, willow, and some

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others, will often grow for a whole season after having been cut and piled upon our wood-lots? The truth is that this phenomenon has never been fully explained. The sap circulates in the plant as the blood in the animal. We have not yet discovered all the secrets of nature. But there are other mysteries. I shall make no attempt to allude to them all.

We know that light is essential to the growth and health of plants. It is a mistaken notion that plants grow more rapidly in the night than in the day, as may be demonstrated by very simple experiments. It is also known that light is a compound made up of all the colors. Without exposure to light plants would be destitute of color. By the prism we can separate the colors of light, but how it is that the plant not only does this, but fixes the colors when separated and makes them a part of itself, has never been explained. The earth is carpeted, as it were, with plants and flowers of every hue. The artist studies their delicate tints and strives to transfer them to his canvas, but never with perfect success.

But light affects plants in other ways. They have a sort of affinity for it. Many flowers appear as the morning light becomes strong, and fold themselves to sleep as the sun declines. They do not condescend to show their delicate faces in a cloudy day, and many have supposed that the closed flower was a prognostic of the approaching storm. It simply indicates an absence of light. Some flowers follow the sun, in its diurnal rounds, so closely as to almost answer the purpose of a sun dial. The most familiar example is the plant which, from this circumstance, is commonly known as the sunflower. Most of the vines twine in the direction of the sun's motion. A few perverse specimens, like some men, travel in the opposite direction from sheer obstinacy.

Variegation in the leaves of plants is supposed to indicate disease. I have been unwilling to adopt this theory, but felt almost forced to do so. It is certainly true that plants with variegated foliage are less vigorous than others of the same species The advice of Mr. Greeley to his Kansas friend, to grow the plain handle variety of broom corn, as being more hardy than those having stripes on the handle, certainly indicates that our best informed agriculturists have observed this important fact, and that a knowledge of it may be of practical value.

But I have taxed your patience too long. I only regret that I have not been able to present the subject in a more attractive

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form. I trust that my effort may serve to attract attention to a subject that has been intensely interesting to me.

At this season of the year plant growth is at a stand still,—plant life is slumbering, but it is not extinct. Vitality lies stored up in the seed, root and branches, and only waits the genial air of May to rouse it to new activity. Nature allows the tree to sleep for a season, with pleasant dreams of the coming spring. The birds will soon sing again in its branches, and its fresh verdure and flowers will make the landscape beautiful, and fill the air with delightful fragrance. This is emblematic of the Christian's hope. With something akin to faith, the tree casts off its sombre garment in autumn, and cheerfully endures the biting blasts of winter to come forth again after its death-like slumber, strengthened and with renewed vigor.

If we watch closely the development and progress of vegetable life and growth for a single season, from the germination of the seed and the unfolding of the bud, to the ripening of the fruit, we shall have discovered a new world. New objects of interest will present themselves on every hand. We cannot fail to form higher views of the wisdom and skill of their author.

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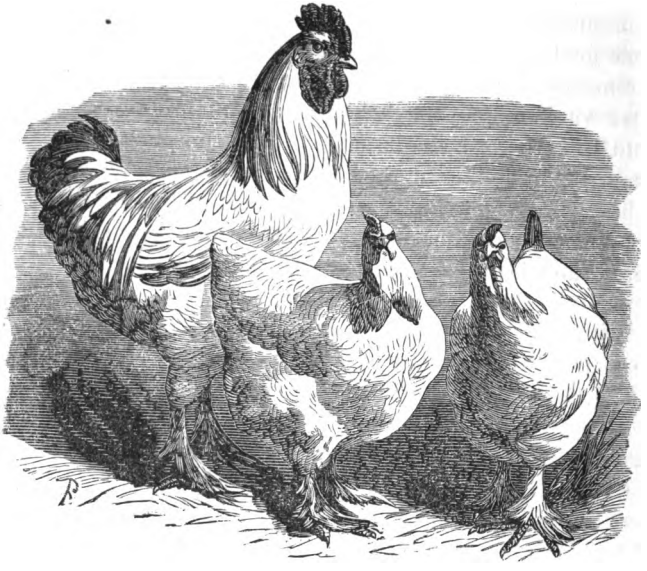

BRAHMAS.

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THE CEREAL CROPS.

WHEAT.

At one of the meetings of the Board, the subject of wheat growing was proposed and discussed at some length, without any special preparation by any individual. It was an impromptu discussion.

Mr. Lawrence, of Somerville, Mass., said he represented a firm which tilled three hundred acres of land, and raised millet for fodder Soil inclined to be gravelly, not thick, naturally poor. The farm was capable of bearing twenty bushels of corn per acre; made it experimental; raised wheat with other crops — forty to fifty bushels per acre, with proper dressing. A bushel of wheat contains, according to Ville, phosphate of lime to a large amount. All plants must have it to produce grains. He raises spring wheat, selects best seed, plows the ground thoroughly, sows in furrows, and harrows well with the cultivator harrow. Wheat can be raised in New England.

We have an idea that chemistry is beyond us, but there is common sense in science. If we can give a reason we ought to be satisfied, and we *must* give a reason. He advocated thorough pulverization so that the roots may take up the nourishment they need.

An acre that will grow a ton of weeds will grow also a ton of grass. As we can't cultivate wheat after it is sown, he has brushed it over to advantage to kill the weeds. He said women want white flour. He advised to put back into the flour the phosphate which is taken out in bran. In order to raise corn and meal we must have phosphate. It exists in good native soils. The white flour we buy does not have much phosphate. He wished every farmer would try an acre and note the result.

Mr. Joel Baker, of Lebanon, said he could practice but not

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speak. It has been said New Hampshire produces more per acre than the West. That is true, but we must consider how much is unfit for cultivation of wheat, and that our culture of wheat must be limited to the amount that we can prepare for it. Scarcely more than two per cent. of our soil is by nature fitted for wheat. There are sections, however, that will compare well with the best soils for wheat. He would not expect to raise all the wheat wanted in the State. Fifteen hundred bushels of corn and three thousand barrels of flour are received annually at Lebanon depot. He is a small wheat-grower, sowing some two bushels to the acre; good crop to stock down; it is not profitable; recommended plowing in clover as a fertilizer for wheat.

In a correspondence with a former resident on the borders of New Hampshire — Henry Poor, Esq., of Staten Island, New York, — the Secretary suggested that an interest in wheat culture had sprung up in some parts of the State, and that an encouraging word on the subject from him would be pleasurably recalled. He immediately forwarded the accompanying pages, which contain statements that would be received by expressions of doubt, did not many of our best agriculturalists know the writer to be a careful and intelligent gentleman:

To James O. Adams, Esq., Secretary of New Hampshire Board of Agriculture, Manchester, N. H.:

My Dear Sir — Your honored favor of April 11, in behalf of the Board of Agriculture, soliciting information on the subject of wheat growing on the "rough lands" of New Hampshire, was duly received. Nothing could give me more pleasure than to impart the little knowledge I possess upon the subject to that noble class of fellow citizens whose exalted occupation is to "till the ground."

I believe fully in the soil and capacity of your state to feed a quadruple number of your present population, and with thousands of acres to spare, The great wheat cereal has been lost sight of, while you have raised in abundance rye, barley, oats and a goodly share of corn. I trust I shall show to you the entire practicability of raising spring and winter wheat as the *surest* and *safest* grain crops on the farm from year to year. Its cost from the plow to the granary per bushel is no more than the other grains. Its *value over and above any grain* is double and sometimes treble. No branch of business can increase the general weal of the state so universally as this. *It is the farmers' legitimate crop — practice will prove it.* Help him as they have done in Maine by legislative enactment. But I must come to my main subject and trust you will pardon the long prelude.

In the matter of *wheat growing* in the New England states, an experience of six consecutive years with the winter variety has been my successful

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teacher. My first planting early in September, 1844, was on mowing sod of a black heavy mold, (clay subsoil) obtaining forty-two bushels on less than an acre and a quarter. I planted out my young orchard the fall afterward and again sowed down to wheat obtaining thirty-five bushels without manure, exeepting five casks of slaked lime. I continued this practice on my farm at North Andover, Mass., successfully, where the mowing was growing light, succeeding every year till the sixth, when the rust took my wheat almost at the harvest hour, leaving me with the small yield of twelve bushels of scrimped wheat to the acre. Dissatisfied with that result it was comforting, to know (when I had ascertained) that the crops of the western states averaged for a term of years twelve bushels per acre. My whole term averaged about twenty-five bushels per acre.

My land was too cold for spring wheat — descending heavy grass land — in every instance sowed on the inverted sod without manure. My practice was to soak seed in brine and rake it in ashes before sowing, having a dread of weevils which, doubtless, are brought in the seed, and in my judgment not natural to the soil of New England where wheat is comparatively a stranger. Besides, the fertilizing effects of these alkalies, and in quickening germination, are to be considered. I beg to ask why the weevil should exist in a soil where its plant food is wheat, and never disturbs the other small grains. As yet we have very imperfect knowledge of this little pestiferous insect.

The board will pardon me for stating a few incidents that happened during my wheat pilgrimage. The first call I had for a bushel of seed wheat was from Levi Bartlett, Esq., of Warner. From this veteran and pleasing correspondent, I learned that he pursued it for eleven years making little impression on his flinty hearted neighbors, probably so deep in the old ruts of unbelief they were hopelessly anchored for life.

Rev. A. B. Loring, my excellent minister and neighbor (father of Dr. Loring), was induced to sow a bushel of my wheat. He accepted it reluctantly, not being full in the faith, but saying, "I have a piece of ground prepared to sow two bushels of rye." He sowed one bushel each and harvested eighteen bushels of wheat, and not a berry of rye, which from too rich manuring made large straw and false heads.

Another instance: Samuel Frothingham, Jr. of Milton Hill, six miles from Boston, dressed his two acre pasture heavily with pig manure, plowed it in and sowed four bushels of my wheat. He harvested ninety-two bushels and would have exceeded one hundred bushels had not a portion of it lodged in a thunder storm. Wheat will bear the highest culture and PAY, while rye will fail under the same treatment. Hence, throughout New England, sand banks and shallow plains are profitless rye fields all over. Varnum Spofford was my neighbor; his grandfather's rye patch, thence his father's, thence his, always producing rye, from eight bushels to sixteen, the maximum. I induced him to sow one and a half bushels winter wheat, prepared with brine and ashes, on condition that he should not return the one and a half bushels if the crop failed. He harvested twenty-six bushels, and could well afford to return the one and a half bushel.

I name these few incidents in my first experience of wheat growing till I left my native state and took up my residence in New York. Mercantile life did not quench my ardor. I felt it an imperative duty to go on *advising*,

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coaxing and *imploring* the New England farmers to raise their wheat, to look at their geographical advantages over the Canadas and the wheat lands in the Provinces, even the west with its rich prairies now being abandoned for the high rolling lands to avoid winter kill and rust. Your deep snows keep the plant warm as with a blanket leaving its ammonial nourishment while melting in the sunny spring time. In my humble judgment there is no section on this planet so favorable to the growth of spring and winter wheat as the New England States. Can they fail to supply their wants with two crops a season? In December, 1867, almost despairing in my efforts to arouse the farmers to a positive duty to themselves, I addressed myself to all the New England governors, asking special legislation on this important subject. I heard nothing from the governor of your state with whom I have a small acquaintance. Gov. Claflin of Massachusetts promised his attention to it. Governor Chamberlain of Maine responded with his message to the legislature with "compliments" in pamphlet form, made from a tabular statement of facts which I presented to all those functionaries. The state of New Hampshire, with its three hundred twenty-five thousand inhabitants, requires about an equal number of barrels of flour. At $10 per barrel $3,250,000 would be the cash expenditure. During three years when flour sold from $18 to $20 per barrel, the cost hung with crushing weight upon the farmer and all the poorer classes. They are not yet absolved from an onerous tax that can be avoided. We call upon each farmer to cultivate five acres to each farm which would give one hundred fifty thousand acres in wheat, and that multiplied by fifteen bushels per acre would give two millions two hundred fifty thousand bushels, which, with five bushels to a barrel of flour, would give four hundred fifty thousand barrels.

Gov. Chamberlain's message had the immediate effect in passing an act favorable to the wheat grower and the formation of Farmers' Clubs in Maine. In 1868 their product was two hundred thousand bushels; in 1869 and '70 I have not heard the report, but "not a single instance of failure was known in any county of the state in 1870."

Here would seem to be encouragement enough for New Hampshire "to put her shoulder to the wheel." The two seasons of spring and fall sowing would soon check the outflow of your money, and enrich the state immensely. It is no longer a blind problem, but full of light, ye cannot reap where ye have not sown.

This is the great and glorious platform upon which every occupation in life is based—national and state governments, kings, princes, theologians, the forum, the innumerable mechanic arts, the mariner with his compass that guides him through the dark night and leads him at noon day—one and all come back to the farmer for bread and sustenance, secured with blistered arms and toiling hands under the heat of a burning sun. We feast, we drink of the choicest viands, while half of the world are in ignorance from whom and whence they came.

We would say let the farmer rise in his might and magnify his calling. Truly, he has no peer on earth. Independence, reputation and station are his, and above all, happiness and contentment should forever be his bosom friends. The glittering tinsel of city life, its false flutter, its damning influences, its trackless paths of infamy, oh, if the pure country girl and boy could

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in advance see and know the underground devices, the tempting hells, the wary villain, the graceful gentleman scoundrel, quickly would they shrink from the city of vices and say, *our paradise* is on the farm of my childhood.

With many excuses for saying so much, and yet *so little*, I remain,

Very respectfully,
Your obedient servant,

HENRY POOR.

New York, April 22, 1871.

INDIAN CORN.

The growing of corn has been only incidentally discussed by the board, the specific subject being assigned for only a single exercise. We do not now propose to give it a consideration, further than to name a few points of an address on the subject, at the Concord meeting, by Hon. Simon Brown of Massachusetts. The full discussion of this important product we leave, with other cereals, for another year.

SYNOPSIS OF MR. BROWN'S REMARKS.

The speaker began by remarking that he could tell the farmer no new fact about corn-growing; he could only repeat what had been already said; he could only enforce the doctrines that had been before taught.

He discussed the uses of corn as food for man and beast; all farm animals choose it, in some form, for food. It is nutritious, healthful and economical in all its forms. Farmers have, in a great measure, abandoned pork-raising, a concomitant of corn-growing. We buy western pork when we ought to raise pork ourselves. We must use our corn to make it, and the animals will fertilize the crop they feed on. Corn is easy of transportation and preservation. If there is no market now, it may be kept until next year. It is brought on the cob from the west. In its production the great question is how cheap can it be grown? In order to successfully grow it, certain preliminaries and attendants are necessary, and one essential is that the land must be drained, unless it is naturally free from water. Corn will not grow where its roots strike cold moisture. Never put corn in land that will not, when properly prepared, give back a harvest. Another con-

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sideration is deep plowing, after drainage is effected. The roots need a deep bed in which to run. The sun will not penetrate a hard surface, rain will strike it and pass off. Turn up the soil freely, strike the plow into the subsoil and bring up an inch of yellow earth; it will aid in making a crop; it is full of mineral matter, acting its part in the growth of the crop.

The soil should be pulverized thoroughly, not with a harrow, but with a plow. Let in the air and rain,—both are fertilizers.

Plant in straight lines with rows running at right angles, that the corn may be more easily cultivated. Use the hand planter; take pains in planting; cultivate thoroughly both ways; pull the weeds from the hills and dispense with the hoe; make power and machinery do all the work you can. Stir the ground well and leave the result with nature. Don't take time to line your corn to keep the crows off, put a little tar water on your seed and they will not trouble you. Go over as little land as possible with your manure; get large crops and large profits.

The corn fodder is valuable, more so than we are accustomed to think. It is fattening, milk producing and strengthening. Stable keepers have been known to keep horses on corn fodder all the year.

The speaker does not believe in cutting stalks but in cutting up and shocking the corn, which makes the grain quite as heavy and the fodder much better; husk early. Believes in selling hay and using corn fodder to a certain extent, or, which is equivalent, keep stock enough to consume both.

Corn ought to be the king crop of New England, and would be if properly managed. The speaker stated that corn required, according to the practice of some farmers, from sixteen to twenty-two days' work per acre, which was too much for profit, and in order to work with spirit, a man must feel that he is making a profit or achieving a success of some kind. Gov. Brown referred to the improved condition of farmers' homes in New England, and concluded by reading the following statement from an eminent farmer:

TO RAISE CORN.

If grass land, plow deep in the fall, to have the sod rot, to kill worms, and to save work in the spring. Manure in spring with thirty-two loads of good manure to the acre. and plow in lightly with horse plow. When the ground is warm, harrow and bush angle-ways so that the marks may not interfere with the lines. Take a light pole long enough for six rows (three and a half

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feet to each), and attach as many light chains or weights, and draw each way. Make the rows perfectly straight for convenience of cultivation. Drop the corn with a corn-planter on each intersecting line. Commence cultivation as soon as the corn can be seen. Go through with the cultivator every week, and as often with the hoe. It is easier to hoe four times than twice, when you commence late. Go over the field, when out of the way of worms and crows, and thin to three stalks. Hoe as late as August 1st, if there are any weeds. It is a good practice to hoe level and sow grass seed, to save labor. Cut the stalks or stakes as the case may be. Cure the fodder well and it is worth one-half the labor of cultivation. From sixteen to twenty-one days work is all the time necessary to cultivate an acre, as a general rule. When husking is done (and that always in evenings or on rainy days), every man or boy has his own basket and husks independently.

STATEMENT.

Credit by sixty bushels corn, $1.25		$75 00
Thirty-two loads manure $32.00, one-half credit to following crops	$16 00	
Sixteen days' labor $28.00, one-half credit to corn-fodder	14 00	
Seed corn, interest and taxes	7 00	
		$37 00
Balance		$38 00

COL. CLOUGH'S REMARKS.

Col. Clough, of Canterbury, was called up and made a practical and instructive talk on corn growing. He raises twenty acres annually, but don't make it a specialty. He believes in mixed farming, advocates thorough preparation of soil, liberal manuring, chaining both ways, using cultivator freely, which must be sharp.

He said he had been on his farm fourteen years. It had previously been rented thirty years, been skinned and was as solid as a pavement. He began by thorough plowing. Six oxen he said would plow an acre a day; eight, an acre and a half, and ten, two acres. To kill the grub-worm, plow in the fall; to stop the wire-worm's effect, plow in spring. Col. Clough said he had learned to master witchgrass by plowing so as to turn it under, and by constant cultivating between the rows. He used superphosphate and always made it a point to cover the seed well. He agreed with Mr. Brown in regard to harvesting corn. He thought corn growing exhausted the soil but not so much as it would to sell hay. He believed in feeding out hay and grain and selling stock.

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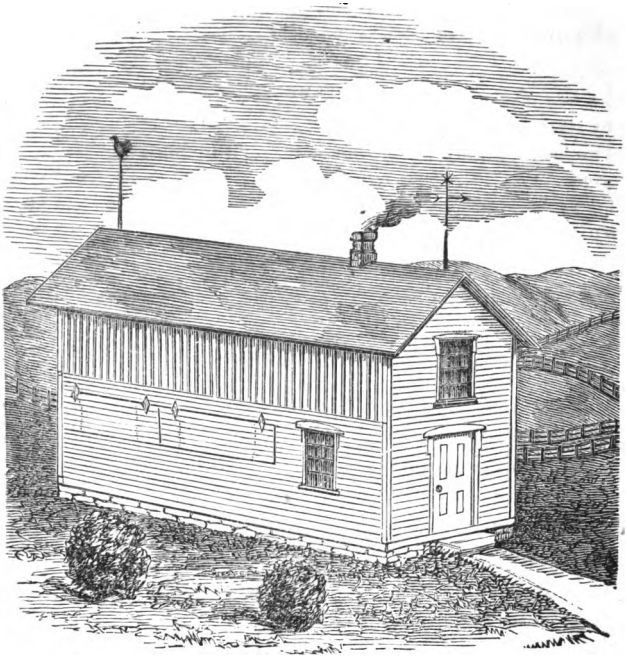

MODEL PIGGERY, WITH STEAMING APPARATUS.

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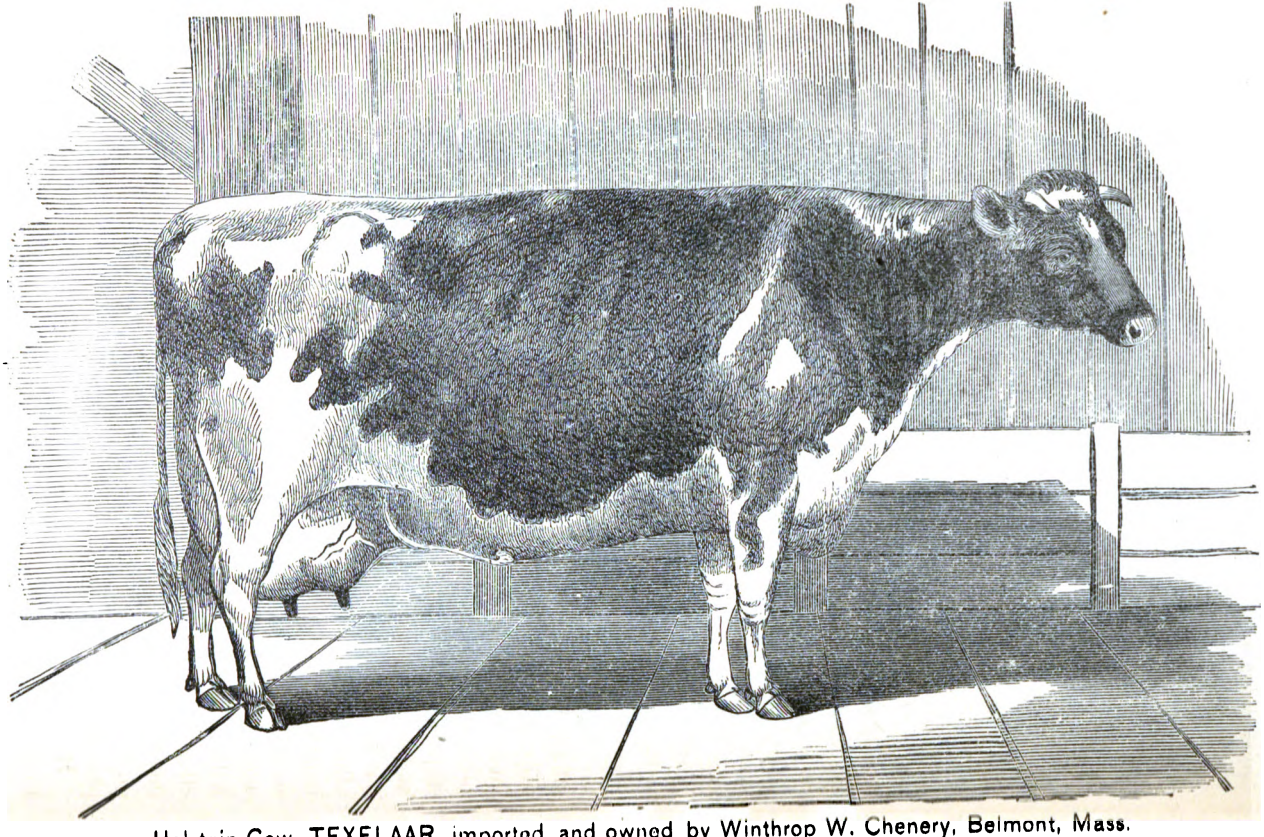

Holstein Cow, TEXELAAR, imported and owned by Winthrop W. Chenery, Belmont, Mass.

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THE DAIRY.

The subject of dairying is beginning to awaken an interest in our state. We have not a soil in all sections sufficiently easy of cultivation to allow the greatest profit from a cultivation of the cereals, nor can we make rapid progress in getting rich by growing roots and vegetables generally. We can produce good corn; we can grow oats, barley and wheat successfully in many portions of the state. We can produce alternate years a fair product of fruit; we can always with proper care and dressing gather a compensating crop of grass, which to New England is the royal harvest. But with our short seasons, our hard soil, a lack of stable manure, and the expense and uncertainty of special fertilizers, and above all the high price of labor, which we maintain is none too high to afford the laborer the comforts of life, we cannot compete successfully with the great farmers on the rich lands of the West. We must seek other sources of income to supply the deficiency of products that should come directly from the earth. We have disposed of our lumber too freely, we are penetrating our granite and other quarries, we are harvesting winter fields of ice, we sell our hay and our fruit, but we are limited in our incomes and seek other resources. We have fattened our cattle for the shambles, but the returns are small when measured by our desires; we have stocked our pastures with sheep, coarse and fine wool, but our wool lies unsold in our attics, or has been sent away to an agent with orders to sell at the best price; we have reared horses for the cities and the farm, but profit comes only to the few, seldom to the many, and the question still comes up, especially to the farmers on the many hill lands, and remote from proper markets for the produce of the field, What new source of profit shall we seek?

Having considered the matter carefully many farmers are ready to abandon their sheep folds, lessen the severe labor of plowing the soil to reap a fair harvest, devote a few acres to grass and roots,

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and the rougher lands to grazing, with the view of purchasing young stock, supplying milk on the railway lines, or converting it into butter and cheese.

Associate dairying prevails in New York and in other states, and has already been adopted to some extent in our own state. Two cheese factories are in operation — one at Alstead and the other at Orford.

The Secretary applied to the owners of the factories for statements of operations. Mr. Tillotson, of the Orford establishment, gives but few facts, with no figures regarding profit. He says:

"The building is thirty by eighty feet, with engine room, press room, and dry room on lower floor. The second and third floors are occupied entirely for drying. We are using the milk from two hundred and fifty cows this season; in the best of the season making four hundred and fifty pounds cheese daily. The temperature of the milk while setting is governed by hot and cold water carried around the vats in pipes from the engine. The whey is all carried away in troughs to the piggery, which is twenty-four by thirty feet, with wings upon either side, eighteen by fifty-six feet, and eighteen by seventy feet."

Mr. Dinsmore, of the Alstead factory, says:

"I have kept fifty-four cows on my farm in Alstead, N. H. I commenced to make cheese in my factory May 16th, and closed September 15th. Number of pounds of milk received from fifty-four cows, from May 16th to September 15th, was one hundred and seventeen thousand three hundred and three pounds. It took nine and one half pounds of milk to make one of cheese, equal to twelve thousand eight hundred and seventy-three pounds of cheese.

"Cheese (average net 15 1-8)	$1,947.04
Butter made from Sept. 15 to Dec. 1, 1,527 lbs., (average net 45 cents)	687.15
Pork fattened, 4,850 lbs. (12 1-2)	606.25
Calves fattened in the spring, sold net proceeds .	155.00
Butter sold in the spring before commencing making cheese, net	160.00
Received for pigs sold from May 1, to Oct. 1 . .	125.00
Total	$3,680.44

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"I have also raised nine calves that I value at ten dollars each. If I had made cheese all through the season it would not take on an average over nine to nine and one-quarter pounds of milk to one of cheese. One gallon of milk, which weighs eight and one-half pounds, will make a pound of cheese in the months of October and November. I did not take any extra pains with my cows; I only gave them two quarts of meal apiece, in the spring before they were turned out to pasture, and they have had none since."

At the Lebanon Farmers' Meeting the dairy question was discussed in some of its branches, especially in the matter of co-operation. O. S. Bliss, of Vermont, Secretary of the Dairymen's Association, made an hour's talk on the subject, which we hoped to lay before the farmers of our state, but are compelled to reduce it to a mere synopsis. He said co-operative dairying exists in New York and New England, so far, only as an experiment, and is as yet not perfect, with buildings and apparatus inadequate. Cannot say it is just the thing for cheese, but for butter making it is all right. Cheese making impoverishes the soil. It was falling off in Ohio, in Herkimer County, N. Y., and other places, on that account. Smaller ratio of cheese per cow is made in older countries. It is proposed to make butter instead of cheese by co-operation. There are objections, but it has been successful elsewhere. What is desired is good feed throughout the year.

He spoke of a new method of stocking the dairy, by which we can make butter in winter, on good feed. Good grass is most important, but it must be supplemented in winter. The objection to summer butter is met by the statement that cold water is needed. Milk should be cooled to fifty-eight degrees. The method in Vermont is to cool the milk, set in old pans; deep pails not adopted; though coming in use. The theory is, all milk must be cooled to fifty-eight degrees, then permitted to rise by heat of the room. Makers regard seventy degrees as incapable of souring milk until the cream rises. Process at factory, Orange County, is to set in deep pans, skim about thirty hours after setting, as all the butter cannot be worked into cheese. Process of saving butter from the whey of cheese, tried at factory at Milton River, successfully. Experiment of skimming at twelve hours has been tried and the result is that we cannot tell the difference between it and other cheese. Butter is made from the milk and the cheese brings the same price as full cream cheese; all milk should be ripened before

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using to secure best result. Set the cream away until it becomes slightly acid; skim before souring. Less butter is produced when acidity has progressed. Cream always sours before it yields butter. Saltpetre is injurious, has no preservative principle. It is used to keep meat from taking too much salt. Never recommend potash, except to correct acidity in connection with annattoein. The quality depends on the feed. No objection to carrots. Every dairy woman *makes the best butter*, but *cannot* get the best price. Do not depend upon breeds. Whole milk butter best for sea use.

The above in short are the hints given by Mr. Bliss. They will serve as suggestions for future discussion.

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WINTER DUTIES.

[An Address by James O. Adams, Secretary.]

It was formerly the practice of farmers, like certain classes of animals, to hibernate — to shut themselves up during the winter months, and do little else than consume the farm crops, which they spent the spring, summer and autumn in producing. If they could maintain sufficient vitality to draw up a pile of wood, give their cattle feed enough to keep them in a healthy state, and once a week exchange a load of wood or produce for groceries — the trader naming the price on both sides — it was too often the realization of their fondest anticipations. They never read an agricultural paper, for there were none to read; and never saw a half dozen books on farming in all their lives, while farmers' clubs were institutions entirely unknown.

There are, at the present day, too many who have inherited from their fathers hibernating habits. They are as useless to themselves and the world, through the winter months, as so many Esquimaux. They are content to follow in the footsteps of their ancestors, live as their fathers lived, and dying, bequeath their stupidity to their sons and daughters, even in this day of agricultural knowledge and rural improvement. Fortunately, not the entire generation that preceded us had this patrimony to leave to their children,— or more fortunately, many at the present day have transferred all such legacies to the indolent and unambitious, and made for themselves, by foresight and industry, a possession and a name worthy of an honorable record.

The majority of New England farmers to-day find the winter months quite as profitable, and presenting quite as important and oftentimes more pressing duties than those of seed time and harvest,— even more so in regard to social and intellectual culture. I propose, during the few minutes I may speak to you, to suggest

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some of those duties which should engage the hands, and especially the intellects of New Hampshire farmers, during the winter season.

The first demand comes from the barn; and with those farmers who depend much on their stock for profit, it comes with irresistible force from the young and as yet untrained horse, that with proper care will, one day, command its hundreds in the market; from the milk-giving cow that daily fills the milkman's cans; from the faithful ox that is gaining strength for labor or flesh for the butcher's cart; from the fleecy flocks, which though now unremunerative, should be remembered for their past utility and be cared for, that they may again serve the purpose for which they have been kept; and not the least of all, the demand comes from the young and growing stock which will soon be sold, or take the place of those mature and hardy animals which now give character to our flocks and herds.

Without going into particular processes, it is enough to say that regularity in feeding, an abundant supply but not a surfeit, clean stables, protected yards, adequate shelter and pure, fresh water of moderate temperature, are the chief requisites of successful stock tending on our New Hampshire farms, during our winter months. The labor necessary for this, with the care of the poultry and the swine, the providing of wood for household use — and possibly to pay the blacksmith and the shoemaker — the oversight of the vegetables in the cellar, the breaking of roads over our deep valleys and wind-swept hills, with such other duties as day by day appear, will occupy the time of one active man, at least, on each farm, during the work days of winter.

If the farmer be the owner of wood and timber lots, and draw therefrom to market and to mill; if he has a surplus of hay and straw, of vegetables, fruit or grain to sell, and purchasers contract for their delivery; if he unwisely postpones his threshing until the snowy season, as many farmers were once accustomed to do; if he be so situated as to find it to his advantage to buy manure at the village or city stables, or has a warm cellar for composting; if he possesses a muck bed, inaccessible in summer time, which he can work in winter; if he cuts posts and rails for farm fences or railways, or lumber for building; if, in short, he engages in any of the labors which are open to him, as well as others, and promise him advantage, he will find the pressure of winter days upon him quite as potential as those of summer.

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An important work that the ingenious and skillful farmer can perform is the manufacture and repairing of farm and household utensils. He should have a work-shop furnished with such mechanical tools as will enable him to do much of the ordinary work of the carpenter, and some that ordinarily requires the skill of the blacksmith, the cooper and the harness-maker.

With a saving of the varied material that always gathers about a farm-house or barn, how many an implement may be made or mended; how many a chink in the wall or roof or floor be stopped; how many a pane of glass be set or patched; how many a belt or girt made strong; or buckle, button, latch or hinge replaced.

Then there is the working in corn husks, the manufacture of mats, of beds and mattrasses—far more serviceable than straw, and more healthful than down or feathers. The farmer, too, may with material often growing on his own soil, make his own baskets, seat his kitchen chairs, prepare boxes for his early plants, which he will have if he live near market. He may select his seed for the coming spring time, and thus daily find employment for himself and those dependent upon him. Omitting mention of other winter labors of the hands, such as gathering a harvest of ice for summer use, the management of poultry houses for the profit which eggs will bring, the manufacture of many articles of domestic use which will command a profit in the town, and the other fields of profitable employment, let me remind my hearers that the winter, if ever, is the season when the farmer must adjust his accounts, an old story, I know, but one that must be repeated as often as fall the winter snows. But more important than work itself, is the culture of the mental powers. The farmers' work should be attended, or rather anticipated by thought, in order to accomplish the most gratifying results, and what season so well adapted to this mental work as the winter days.

No manager of any industrial pursuit can maintain a position gained, however earnestly he may toil, without the accompaniment of thought; much less can he make progress in his occupation, without the exercise of mental powers quite as vigorous as those of his physical nature. Usually the more mind there is employed in a given undertaking, the less bodily effort is required. A labor thoroughly studied and properly planned is half accomplished at the outset, and in no pursuit are study, plan and purpose more essential than in the various demands of the soil. Though this be true and acknowledged, there is no vocation that

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ordinarily is prosecuted with less forethought and judgment. Too often the farmer has been taught by example to exercise his muscle to excess, and allow his brain to be unemployed, and consequently, undisciplined. To such a degree does the farmer often neglect his mental powers that he becomes as unconscious of his native resources as the mountain of its ore or the mine of its inestimable gem. His muscle, being developed, is strong and effective; his mind, untrained, is weak and powerless.

Now, in order to think, there must be practice, at least to make thinking serviceable; to think and work still more experience is required. Without culture, without the practice of applying the mind to material labors, one cannot go on with work attended as intelligent labor should be, by thought; wanting this practice, a person will often cease his physical exercises, to consider and lay plans that he may the more easily effect his purpose; while the man inured to thought, having a general plan, is ready to meet any contingency while his work is in progress.

The mechanic cannot work without thought except in the merest routine. Destitute of ideas he becomes a machine without the restraint of those inexorable laws that control machinery. With mental exercise, he possesses all the attributes of mechanism to which is added a spirit, a soul that anticipates natural laws, through the higher law that governs its own actions.

Now, without theorizing farther, let me urge the farmer to *think* when he lays out his fields, when he takes a boulder from the earth, or when he removes a stump from its native bed; to *think* when he attaches his team to a plow-beam, or cart-pole, when he strikes his spade into the soil or his fork into a manure heap; to *think* when he inverts the sod, or drops a grain of corn or the germ of a plant; to *think* when sapping weeds and noxious insects make their appearance, when he swings the scythe or thrusts the sickle into the ripened grain; when he plants or prunes his orchard, or gathers the golden harvest, or fells the oak or pine in the forest; when he breeds a horse or ox or other animal for use or sale; in short to *think* of the way and the end, in all the operations of the farm, and all the requirements of his occupation; to study nature and her laws, to investigate the mysteries of art, at least the art of agriculture, and to work with the mind while the hands are engaged in labor; to exercise the brain that the muscle may be spared. Then will the farmer find his duties less irksome and his pleasures greatly augmented; then will his influ-

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ence increase, his society be sought, his opinions be respected, and his achievements be honored and rewarded. Let me entreat you to *think*,—to study more and toil less. Brain and muscle must be co-workers in your pursuit, but brain must take the lead and point the way, that muscle may the more easily accomplish the work, and both share the reward.

This mental culture should be the chiefest of duties after proper provision has been made for our physical wants. Let us write it on our memories; let us treasure it in our hearts; let us henceforth put in practice the sentiment that one of the most important duties of the farmer and the mechanic, quite as much as of the professional man or the student, is to think.

Having diverged from our starting point of manual labor, we now find ourselves in the broad field of intellectual culture, where there is unlimited work for the farmer, especially at this season of the year. The more we toil here, the more we find to be achieved; the more we achieve, the greater the satisfaction we derive. Let us now consider some of the intellectual duties required of us during the resting season of the soil.

It has become a common practice with the best farmers to plot their ground in advance of its cultivation; to make with a pen a plan of their farms, rough and rude it may be, but still useful. With pasture, woodland and arable field marked out, and each lot designated, the farmer may lay his plans for work, and decide where and how much corn he will plant, how much seed with potatoes, where to sow his wheat, his oats and peas for making sweet and solid pork, and thus go over his paper farm, and arrange for much of his summer work when his real fields are clothed with their robes of white; and in this way be prepared the more easily to perform his work in its season. If he knows, as he should know, the area in acres and rods of each field, he may in these long evenings make his estimate of the expense of plowing, of manures to be purchased, the seed to be sown, and of the labor that will be required to carry on his farming operations, and employ his help accordingly.

An important duty of every farmer, and it should be performed early in the year—we may say the most essential to his happiness and prosperity—is to provide for himself and his family a select variety of weekly newspapers, and if he be so located as to receive a daily, that, too, should be added to the list. With the present competition by the press, he may obtain, at no great ex-

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pense, a religious paper, one of a political character, both selected with reference to his religious and political notions, unless he be sufficiently liberal in sentiment and in purse to patronize opponents as well as co-laborers. He should have one devoted mainly to agriculture, or, if only partially agricultural in its character, let the deficiency be supplied by a monthly journal of the farm. If he has a family of boys and girls he must add to his reading stock at least one paper of a miscellaneous character. Four journals like these I have named can be found which, in clubs, will not exceed in cost *six* dollars a year, or two cents a day for the working days in the calendar! Many a farmer can save it in reducing his smoking and chewing stock. In this connection allow me to quote a practical author on this subject:

"Most of our improvements come through the agricultural journal. It is a wide pervading intelligence that accomplishes them. The agricultural paper is to the farmer what the newspaper is to the world at large; it communicates intelligence.

"Who are they that take agricultural papers? The answer is clear; the most intelligent farmers. If there are fools, they are on the other side — where things are not known, but where they think they are known.

"The difficulty with taking agricultural, as well as other papers, is that they do not return the hard money to you as you pay it out. You see your money go yearly for the paper, but you do not see the benefit derived come in the same visible way. This comes in the grain increased, or the improved stock; and thus you do not count the difference, because you do not refer to its appropriate source.

"The press is the great power of the land. Not that it originates; but it tells what is done, so that we can do it also; it suggests. We see what others do, and may do what they do. The paper, then, is a medium, a *necessity;* we cannot possibly get along without it — at least we get along much better with it."

The next provision the farmers hould make, and I put it down as one of his winter duties, because now is the time to consider it, is to lay the foundation of a library of agricultural and other works,— biography, history, travel, poetry and romance. Let every farmer secure the lives of prominent men, and women, too, of our own country — works of American and English history, and such other volumes as circumstances will admit. Nothing will have a stronger tendency to attach the young people to their homes than books and readable public journals. They make home attractive; they add a charm which renders it a place of lasting joy.

Another duty of the farmer and his wife, indeed, of every citizen, is to look after the instruction of the young; to visit the district

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school, and thus show both pupil and teacher that you have an interest in them; that your *children*, quite as much as your pets in the barn, are not forgotten. Never allow yourselves to complain that children do not learn now as they did in your young days, nor assume that the past is better than to-day. It is not true, and your children will detect you in a falsehood when you say it.

Another essential duty of the farmer, for his own advantage, and that of his children and the public, is to lend his influence to form and support in all the towns farmers' clubs. The farmer needs knowledge; it is the great demand of the age, and we must possess it or fail. It may not be "book knowledge," though we must acquire much of it through books. It may be wholly practical and therefore the more valuable for the time being. The knowledge to be acquired by most men who have past the meridian of life is from observation and from practice. They cannot now confine themselves to study at the student's desk, for they did not learn in youth and it is now too late to learn readily. The great means of acquiring this practical education, and of making it at once available, is through the agency of the farmers' club, in every town of the counties in the state.

[The speaker gave reports of model clubs and directed the manner of organizing them.]

The time has come when the young farmer must have a greater degree of knowledge than his predecessors. We who left our schools long ago can only look back with regret that we had such limited means of education, and that we improved even these advantages so imperfectly. It is now too late for most of us to learn thoroughly. We can only catch what passes in review or what our restricted reading will give us. But for our children there are opened unnumbered institutions of literature, of science and of art. Libraries unfold their treasures, the daily and weekly journals contribute to the increasing stock of knowledge; while the farmers' club, the village lyceum, county and state agricultural associations, and organized boards of agriculture, by their discussions, exhibitions, and published documents, keep all alive to new thoughts, new methods of culture and increased facilities for fulfilling our mission.

Having said so much regarding the subject of intellectual culture, let me tell the farmers of New Hampshire that they must do something to save their homes from utter abandonment and their farms from desolation; and how can they better aid in accom-

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plishing the work than by offering a mental reward to their sons and daughters that will induce them to remain at the homestead? The hearthstone should ever be pleasant to you and attractive to your children. It is the school where they are to learn the lessons for their future guidance, and it is the sacred place where your declining years are to be passed. Make it cheerful and joyous by all that science and art can contribute. It is not a sufficient incentive to the young man and young woman to remain upon the farm, that farm life is the school of true manhood; that it develops man's physical nature to its fullest capacity; that it induces industry, frugality and temperance; that it can be made the source of wealth, and is ever free from the annoyance of business life. It is not enough that it makes one independent in mind, energetic and self-reliant. It is not enough that, of itself, it expands the intellect and heart and leads to a direct association with nature in all her varied forms of beauty and of grandeur. Nor is it yet enough that early associations exert their power to bind young men to the farm. Some stronger, more attractive agency must be sought, and what can it be but a higher mental and social culture, and, as an inseparable consequence, a greater moral attainment.

There is too much seclusion and too much toil. There are not social pleasures enough. Let your boys have a voice in the plans on the farm; in buying and rearing and selling stock; in the sale of wood and hay, and whatever you have to convert into money. Let them feel that they have an interest in the homestead and a share in the profits of their labor. Let your daughters have some control and responsibility in the house, and the means of intellectual culture. Let there be no niggardly dealing with any member of the family if you would make such a home as was pictured to you in the days of your early life. What we need and must have, borrowing suggestions but not words, is less toil, less drudgery, less exclusiveness, less distrust of our own abilities, less deferring to the opinions of others; more thought and study, more mental culture, more social pleasures, more freedom from the dull routine of farm life and household duties, more holidays, more music and poetry and hilarity at the fireside of home; more agricultural and mechanical fairs; more gatherings like this, where the farmers come up in a body to express their opinions and receive suggestions from others; where mechanics mingle with the tillers of the soil; where the merchant will lay aside his anxieties about bills and notes, and meets with him who cares little for banks that

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close at four and drafts at sight; where the physician may leave patients to faithful nurses; lawyers give over briefs and clients; where the schoolmaster is abroad to learn as well as teach; where the clergy shall leave the rural lessons of the patriarchs and learn the culture of the present. A sensible clergyman of a neighboring state, on this subject, says:

"Is it wise for tillers of the soil to send forth so many of their sons and daughters to other pursuits? Is it wise, young men of the farm, to leave so many of the old homesteads, hallowed by all the memories of kindred and childhood, to relapse into barrenness and desolation? Why should you seek the city or the great West for fortunes, when you have them at your doors? Do you desire riches? You have in your soil greater riches than are found in the sands of the Pacific. Do you long for heroic deeds? Here are conquests worthy of your efforts. Do you seek pleasure, and the enjoyment of life? Where can you secure more of earth's happiness than in the pursuits of the farm, surrounded by the friends of your youth, taught under the same roof, worshipping God before the same altar where your fathers learned and worshipped? Let us then cleave to the paternal acres, and make them more fruitful and more beautiful."

Thus, said an eloquent tongue, from the promptings of a warm heart and a clear head; and in closing let me say, as I have often said, that the farmer has a continued labor before him, mental and physical, summer and winter, in seed time and in harvest. This demand isdaily increasing. Each new city that springs up in the wilderness or by the sea adds verdure to your hills and wealth to your store. Each wheel put in motion is an additional inducement for you to labor, and to think while you toil. Every institution erected in our growing towns enhances the profits of the farm. Our beef and pork, our flour and corn and our unequalled fruit are annually exported across the waters to feed Europe's starving millions, or to contribute to the luxuries of the rich. The eyes of continents are upon the American farmer; the poor and suffering throughout the world look to America as the great almoner of nations. Our granaries, with care and thought and labor, shall be like those of Pharaoh, in the years when famine shall visit and war shall scourge the old world.

Manufacturing and commercial cities, and the powers of the east, must render an equivalent for every bushel of corn, every pound of beef, every barrel of flour or of apples, which steam or

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canvass shall take from our door. Though winter snows fall heavily upon you, and early frosts clothe your fields with withered leaves, you need not doubt. Your lands are not exhausted beyond recovery; your plains are easy of cultivation; your meadows may yet yield a munificent harvest; your forest lands still groan beneath their growing riches; your hills are full of wealth; your barns have been linked by iron bands to the best of markets, and the products of your soil, the fruit from your orchards, your butter and cheese, the timber from your woods and the granite from your quarries, are more valuable than certificates of stock or money in banks.

But what if the picture is not all true? What if there is not so much profit? What if every seed cast into the earth does not yield an hundred fold? Is it man's only motive to gather gold? Is it his whole destiny to labor, amass riches and to die? If our farmers could but believe, when their farms are unincumbered and they have a few hundreds at command for emergencies, that they have enough, and would spend their future income in the improvement and adorning of their dwellings and their minds, then might they be like Shakespeare's true laborer, "Owe no man hate, envy no man's happiness, glad with every man's good, and content with his own farm."

Such should be our aim; let such be yours. Young men, be content with these farms your fathers have tilled so long, and which have never suffered them to want. Never allow the passion for wandering to possess your minds. Let not the broad prairies of the West, let not the sunny fields of the South, let not the golden sands of the Pacific tempt you from these familiar scenes. Abide by the homestead, as your fathers have done; respect your calling and you will compel others to respect it; read, study, learn; refuse to rely forever on the judgment of others who know less than yourselves. Do this and you will be sought; your advice will be required in the transaction of business; you will be demanded to fill the highest places of honor and of trust, and you will never grieve for the degeneracy of those who bear your name.

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NEW HAMPSHIRE IN COMPARISON WITH OTHER STATES.

[Address by J. Frank Lawrence, Esq.]

Within the year just passed my business has led me over nearly every portion of New England, and in contact with the agricultural portion of the people of almost every nook and corner of these northern states. Of course I have not neglected to inform myself somewhat of the other industrial pursuits of these people, but I propose to speak to you more particularly in regard to agriculture, and to convince you, as I am myself convinced, that notwithstanding we so often hear New Hampshire spoken of as poor and sterile, and a good state to emigrate from, that it is nevertheless a good state to live in, and for all the purposes of active business and a home, it stands in the front rank of these six New England states.

There are, doubtless, some now hearing me who know perhaps as much, or more, in regard to this subject as myself, but the larger portion of you have never seen New England in all its extent, and you too readily, especially the young, accept the idea that New Hampshire is the most sterile portion of the country, and that your sons and daughters can improve their fortunes by going West, and cannot damage themselves by going even anywhere.

Let me begin with our eastern sister, Maine. I have traveled the entire length of every railroad of this great state, and by other means have become considerably acquainted with every section of it, except that at the extreme northern portion, called Aroostook. Wonderful stories are told of the productiveness of the soil there, much of which is undoubtedly true. But the climate there is so severe, the warm season so very short, the expense of clearing these forests so great, the cost of establishing a home there,

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with the certain prospect of giving one-half the crops to get the other half to market, have made the very people who are so enthusiastically extolling this section hesitate to go there themselves.

The fact is that northern Maine is owned by people living in its southern portion, whose interests, of course, demand the settlement of this section; but the late census of the state shows how little influence these persuasions have had upon a people, who value their present privileges too highly to go where they know they cannot enjoy any themselves or reasonably look forward to any for their children. Any man now hearing my voice, who has traveled over that section of the state beyond the Penobscot, will say I am not exaggerating in the least, when I say that I have never looked upon a more bleak and gloomy section of this entire country than this, especially that along the coast from Rockland to Eastport and Calais, though of course in a section so large as this, there are occasional sections of good land, but they are so very small and scarce, that they become exceptions rather than the rule.

Bangor is a smart city, consequent upon its being at the head of navigation on the Penobscot, making it the distributing point for the necessaries of life for northern Maine, and in return receiving the lumber from the country above; but outside a circle of a dozen miles this evidence of thrift does not extend. The traveler who shall start from Bath, some thirty miles beyond Portland, and follow the coast to Rockland, will find not only a rocky coast, but that outcropping ledges and thin soil extend miles inland, while from Rockland to Belfast and Bangor, he will find a moist, cold, broken country, whose people gain much of their living by other means than by tilling the soil, while the Penobscot rolls along in a narrow basin cut for it, between the hills, with scarcely an acre where it overflows its banks and enriches the soil.

Indeed, in all the vast country beyond the Kennebec, I do not think our New Hampshire farmers would find much land that they would call unusually good. It would be useless to deny the existence of good land in the Kennebec valley, although in its whole length there are but few intervales, where it overflows its banks, making natural mowing lands, as do the rivers in our own state.

The Sandy river is an exception; for here, in my opinion, is the garden of Maine, though only a small section, comparatively.

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The farmers here are wealthy and unusually intelligent, raising fine crops and the best cattle in Maine, and as good, in my opinion, as there are in all New England. They are mostly of the Durham breed, long, heavy and beautiful, with a large majority of them spotted or roan in color. Below, or east of this section, in Fairfield and Waterville, extending down to Redfield, is another section of good land. They raise the Hereford cattle here,—a large breed, with white faces and spreading horns, making most splendid oxen, but are poor for all dairy purposes. Upon the upper half of the Androscoggin, from Jay to Mexico, there are some good intervale lands, with the finest barns in Maine. Then, excepting Berwick, South Berwick, Elliott and York, with the other exceptions I have named, I feel justified in saying that Maine is not a good state for our young men to emigrate to, with a view of improving their fortunes.

Of Massachusetts it seems almost needless for me to speak, for living within an hour's ride of its border, doubtless there are many here who know more about it than I do, though there are many here who do not, and for their benefit I propose giving my impressions of it. It is useless to deny that in many respects Massachusetts must always retain a commanding position among the New England states. There is an old adage that a man dies a fool who has never visited Boston, but we do not stop to think that it is ourselves who make Boston what she is, and that without us and our trade the grass would be growing in her streets with returning spring time. Massachusetts is great simply because she has improved her advantages. First settled, she became a natural centre, and the united efforts of sagacious men at her capital have succeeded in holding fast her grasp upon northern and eastern New England. I have never seen water power improved as it is there, especially in its western section and over the mountains. Not a waterfall but has a mill upon it, and hither our boys and maidens are drawn, simply because our water power is unimproved at home. But I think I speak truthfully when I say that in an agricultural point of view, Massachusetts does not surpass the Granite state.

Let the traveler commence at Newburyport and follow the coast to Boston and he will see indications of age everywhere, and that agriculture, instead of advancing, is on the retrograde. In getting to Boston by rail, I submit to you, gentlemen, does the country improve after leaving our own state? Does it improve as

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you go towards Fitchburg and beyond, even to the Hoosac Tunnel? The farther you go in this direction the poorer the soil, though farther south, in some portions of Worcester county, the land is better, and is cultivated by some of the best farmers in the country. But the land here is very broken, and though good for dairy purposes, is hard to cultivate. Of the western section of Massachusetts, much is totally unfit for cultivation, and the people over the mountains know it and have almost entirely turned their attention to manufactures. This section may become noted for its picturesque scenery, and a famous summer resort, but all the energy of man can never make it a good agricultural section.

Every one here of course has heard of the beautiful lands of the Connecticut valley, and at the first glance one receives the impression that they are all they seem. I have spent two weeks in the towns of Greenfield, Deerfield, Sunderland, Hatfield, the Hadleys, Northampton, Holyoke and Springfield, and although I acknowledge the beauty and value of those lands, still I can but think their value has been overrated somewhat; for the same amount of labor and money expended for manure upon much of our New Hamrshire soil would produce crops as valuable (if we except the tobacco crop) as those raised in this celebrated valley. We hear of the large crops there, but that is only one side of the story. You would be equally astonished to know the sums they expend for labor and for manures. Nearly all the farmers there buy hay and grain and feed it to cattle and sheep, selling them in the spring for beef and mutton. Besides, they buy enormously of commercial manures. The town of Hatfield last year expended thirty-five thousand dollars for fertilizers. This is more than the entire value of all the crops of some of our towns, and I submit, *should they not* raise good crops? But they told me themselves they could not get along without this manure; and when I told them of our system of raising crops, and laying down our grounds, getting good crops of grass for six or seven years, they acknowledged to me that their lands would not do it.

I traveled with a team from Boston to Cape Cod, and returned through the section farther from the coast and through Bristol county. Most of the villages are thrifty, but are all engaged in manufacturing; while there are few large, smooth and naturally rich fields in all this country. Nearly the entire country is flat, cold and sandy, with pastures covered with scrub oaks and birches. A few days' ride will show more tumble-down houses and deserted

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homesteads, than thrice the distance in any other section of New England. The reason for this state of things was satisfactorily answered by a boy who was driving me about, when, in answer to my exclamation of surprise that so many buildings were tumbling down, he said "the land was not strong enough to hold them up." There is a small section around Concord, West Newbury and Pepperell which is quite good land, but they are exceptions to the rule that Massachusetts is not a great agricultural state.

When studying geography years ago at school, I learned that Rhode Island was the most thickly settled state of the Union, and I imagined that it was a land of beautiful gardens, with each man a scantily allotted portion, with its entire surface green, blooming and beautiful. But you know that beautiful bubbles sometimes burst, and the most charming spell becomes dissolved and broken. I have found Rhode Island full of thrifty villages and manufactories, but with a soil the poorest, in my opinion, of any New England state. One half of its surface is covered with scrub oaks and bushes, never destined to be truthfully denominated forests. Its red sandy soil discolors the snow in the roads, and what crops they raise in their stony fields are good, if so, from the application of large quantities of manure and thorough cultivation.

Connecticut is not so sandy or covered with bushes, like Rhode Island. Some portions of it are undoubtedly strong, good land, but broken and terribly hard to plow and cultivate. I do not think much of Connecticut is actually poor, neither do I regard it as really good land. In all its length and breadth I have not found a section which will compare for a moment with the section from Hampton to Maine line. We miss here the broad fields all ready for the machine, like those we so frequently find in various sections of our own state. In the valley of the Connecticut, of course, and around Meriden, and in a few other localities, we find sections of good land, but Connecticut is the last state of New England that I would choose for my home. I admire enterprise as much as any one, but when accompanied at *all times* by cuteness and cunning, it becomes disagreeable. Connecticut, it is but justice to say, is a busy, and in some sections, a thriving state; but after coming in close contact with their people, and knowing their habits and customs, after spending a few weeks at their country hotels, and finding that to live with them and be popular, one must conform to customs at which any sensible man

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would revolt, one is glad to return to his New Hampshire home, and probably with a determination to remain there.

I have found Vermont, in many respects, almost the reverse of Connecticut, for its people are remarkably generous and hospitable, and always courteous. The villages are thriving, and yet are what might be termed agricultural villages. By this I mean that they live by exchange with the farmers outside,— mutually laboring for the benefit of each other, while many of the villagers are farmers themselves, owning farms out of town. If you should ask me which state of New England has the best grazing lands, I should answer decidedly, Vermont. Much of its land is adapted to corn, and farmers raise it largely, and potatoes extensively in the northern section. On account of their distance from market, they do not sell large quantities of hay, but would do so did it not cost so much to send it to Boston and other markets. A man who has never visited northern Vermont and the section around St. Albans has never seen herdsgrass growing in its perfection. I think I have seen whole mows of it in which it would be difficult to find a single spear, except coarse Timothy, while the pastures are green, even in the droughts of summer. There is a section of land from Rutland to St. Albans, and considerably above, bordering upon Lake Champlain and extending back for miles into the country, which I think in beauty and fertility is hardly surpassed in New England.

I have now taken you all over New England, and I feel sure we shall all return home satisfied, and contented to spend our remaining days among our granite hills. I have been in the cities and among the farmers of the great West, on either side the Mississippi, and while I concede that there are many advantages one has in that beautiful land, still a short residence there will convince any one that while he may look forward to some advantages for his children in their latter days, that he can see none of these himself, and he makes himself a slave to his anticipations in the future. There is no question in my own mind but that the same health, energy and perseverance exercised by our people here would make a man wealthy in the end in some sections of the West. But these things are impossible there, for though a man may try to persevere there, the facts show that our people going thither with all their native robustness and Yankee energy, soon become crippled in body by the diseases so prevalent there, while the energies themselves become dissipated, and the man changes

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from a live Yankee to a listless and debilitated frame, with hardly an element remaining that he carried there with him.

This may look to you like speculation simply, but it is a speculation sustained by the facts. To illustrate the truth of this statement, I know of nothing which will prove it more clearly than the statement of one of the most intelligent and able men I have met with in all my travels for the past year, a gentleman connected with a society of Shakers in the state of New York, as its chief executive officer, and also in business connection with all such organizations in the union. I spent a day with him in going over their large establishment, and became impressed with the idea that he was a most wonderful man, and that any institution must flourish with him for its executive officer. He said to me: "Once each year I visit every institution of our society in the entire country, and I know of but one which surpasses in fertility this one you are so much admiring here to-day, and, strange to say," he continued, "while those in your own state, at Canterbury and Enfield, flourish and are growing richer yearly, this one to which I allude, with every seeming advantage in its favor, cannot be made to sustain itself, but yearly draws upon our organization for support." He said this condition of things used to surprise him, but that he perfectly understood it now. Eight years ago, thinking to improve matters there, he took from one of their New England institutions a man who had succeeded splendidly in managing their society, and gave him charge of this splendid establishment in the West.

The overseer, as he expected, in the first month wonderfully improved matters, and during the early part of the season appeared to do well, but before its close matters seemed to be going on as of old, and in two years he found it necessary to dispense with the services of this overseer, because the institution was not made to pay, and but little had been accomplished with such a force of *seemingly* able-bodied men.

The superintendent came North again, and you may believe he was particular this time whom he carried back there as overseer. "It seemed," he said, that now he "had a man who could not fail to make the institution a paying one. This man began the same, and, strange to say, he ended the same as the other one, and yet," said the superintendent, "I really believe he did the very best he could. He said the climate seemed to take all his Yankee energy and his strength out of him, and though he seemed to *try* to do

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well, he could not do it, and gave up his place and returned North." The superintendent stated "that the result of it all was, that, notwithstanding all the advantages this beautiful Western institution of ours had, we deemed it for the interest of our organization to sell it, though we find it for our interest to still retain those at Canterbury and Enfield, sterile though they seem, because they are paying institutions."

Curiosity and love of adventure are a part of Yankee nature, still we too often seek for wealth and happiness elsewhere, and quite overlook the privileges and means of improvement around us in our present homes. You will search this wide world over in vain if you expect to find more beautiful land or greater advantages than you can enjoy in some sections of our own state. I have hardly ever seen a more beautiful section of land than you will find in traveling along the coast of New Hampshire, and extending back, in many places, a score of miles.

The wealth of a long settled agricultural community is generally in proportion to the fertility of the soil which it cultivates, and I submit to you, can you controvert the truth of this proposition? You will find no better land in all this broad country than in the valleys of the rivers which run through our state. Perhaps some one will ask, have you ever seen the blue-grass regions of central Ohio and Kentucky, the beautiful limestone lands of Pennsylvania, or the celebrated valleys of the Mohawk and the Genessee, and if so, do you mean to tell us that those lands are actually no better than ours? Sir, those lands appear as beautiful to me as they can to any one, and I know well of their original fertility, much of which in the two last named sections has been exhausted by repeated croppings, with insufficient returns of fertilizers. But a good farm there, properly equipped, costs nearer $200.00 per acre than anything else, and those lands are held by planters, rather than by small farmers, as we term ours here, and a man must expend from $20,000 to $30,000 there to be considered anything of an agriculturist.

You will find no state whose laws give more ample protection to person and property, and which imposes burdens of taxation more justly, and under whose laws, not only the broad acres of the wealthy are protected, but that he who only owns a cottage, and the soil on which it stands may feel an indisputable right to what he claims, which no power, wealth or combination shall wrest from him.

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There is no state under whose laws the wealthy or the stricken child of poverty shall share greater or more equal advantages for education; for in the country school-houses scattered so thickly all over our state, there is no bar or restriction, except to apply to all, and the child in broadcloth and the child in rags meet here upon a common level, share equal advantages, and commence at the same round in the ladder and climb upwards. In the days of the rebellion, while so many of New Hampshire's noble sons went forth to battle for their country, leaving oftentimes their wives and their little ones entirely to the mercy of the people and the authorities, what state in all this broad land took more tender and vigilant care of the soldier, his wife and his darlings, than did the people of the old granite state, regardless of their party and regardless of their prejudices. In other states, the claims of these men and their families may be forgotten, but we know our people here too well to fear that in the future, the empty sleeve or the claim of the soldier's child will be disregarded or forgotten.

Under our present pauper system the wants of all are properly cared for, and our county houses are so arranged that those who are really worthy, and whom misfortune alone forced thither, are not compelled to drag out a miserable existence with those whose crimes have made them what they are, and placed them where they are. We have no palaces in New Hampshire and we do not want them. We have no aristocracy here and we do not want that. We have no terrible poverty here, as in some sections which are noted for wealth, the recital of whose poverty and suffering almost freezes our blood in our veins. But we do have a uniformity in our wealth, style and custom which we scarcely ever find elsewhere, with no lords and no beggars.

Then I submit, can we do better than to stand by, and live in our noble state? Should we not put forth new efforts to make it what it can be made to be? We call our state rugged and broken, while others call it mountainous and beautiful. We leave it for the cities and seaside for our pleasure, while those from distant states come hither to our mountains, and stay here the entire summer and only leave us to return when the spring birds come again. That we have sterile lands in New Hampshire it is useless to deny, but they can be left for grazing and for the growth of fuel and timber. But there is good land enough in our state to easily support twice its present population. Ten acres make a large farm in England, but our farmers want to count their acres

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by the hundreds, and the consequence is that they are poorly cultivated, or scarcely cultivated at all. Let these good lands be divided and subdivided, and let new and cheerful homes arise all around us.

Keep your boys and girls at home, but don't expect to keep them there by throwing the chaff and keeping the grain yourselves. Don't ask or expect improbable things of them. Don't expect them to love a home which has nothing in it to make it lovely, but where it is constant servitude from morning till night. Don't expect them to love your old hill-sides when you have never give them anything there but hard, dull work. Don't expect your daughters will love the old homestead, when they have got to leave it to learn the first lesson in culture or innocent pleasure.

Make your home cheerful and you will make it a happy one. Instead of making the boy hoe all day on the hill-side for you, let him hoe a half day there occasionally for himself. You have land enough. Plow up an acre for the boy, and let him have what he raises; and you will soon find that what little leisure time he has will be spent there instead of running to the village. Don't make him put all its proceeds in the bank, for he will soon tire of working for money which does him no good. Let him take a certain portion of it and buy something to read or to make his room or home pleasant. Don't shut up your best rooms for visitors, and give yourselves and children only those which are dark, gloomy and which you are always really glad to leave for open air and bright sunshine.

I repeat this, and I submit to you its justice: don't shut up your most cheerful rooms for visitors alone. Probably not many of you expect to live more than a century or two, at most, and do you ever ask yourselves what you are living for? We do not any of us have many visitors, and shall our only cheerful, sunny room and carpet be kept exclusively for them alone, to be closed with their absence, and never really enjoyed by yourself, your wife or your little ones. I have myself visited families not many miles from this place, who, upon my arrival, would usher me into a room, the best, sunniest and most cheerful in the house, which was alike guiltless of dust and of comfort. Its close and suffocating air was evidence of its sacredness, and if by chance the children should happen in, their every movement was most carefully and even painfully watched, for fear something might

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get tumbled or soiled, while the appearance of the children themselves showed how new everything was to them, and with what sacredness they had been taught to venerate it.

Pardon me if I speak plainly, for I am in earnest in this regard. You know we have too many such homes all around us, and I again submit, are you doing yourself and your families justice in continuing such a system? Think of the idea. Build a large nice house, with its front and pleasant rooms to the sun, and shut these up for occasional visitors, deny yourself and family what God himself intended you should enjoy, and shut yourself up day and evening in the little crowded room in the L, where, though without doubt you have enough to eat and drink, you have nothing else, comparatively, to make your journey of life a cheerful and a happy one. I have no parlor in my house. They are not popular in my vicinity, and for one I hate the very name, for it brings to my mind visions of rustling silks, formality, long bows and low bows, a place where the warm emotions of the heart are safely secured by throngs, though gossip, scandal and envious slander are given full license, which are too often exercised.

Don't make your children always go from home for pleasure. Let them enjoy themselves there. If their richer neighbors have little parties let your children have them too. Apples and nuts don't cost much, and if they keep you awake a little while, don't be surly about it in the morning. You can do much more to keep your children at home with you when your hairs are gray, by making them love it when young, than by months of persuasion when they are of age,— when they can truly say there is not a single tie to bind them to the home of their childhood, or at least when every pleasant recollection is covered twice over with the unbending severity of stern home discipline.

True, wealth can do much to make home attractive, but taste, industry and an appreciation of the beautiful, can do wonders in making the humblest home a beautiful one. One of my countrymen, whose thoughts so often drop like sparkling gems, has put in my way the words that so beautifully describe how charming a humble home may be made to be, when he says:

"If I have no coaches and horses, I can, at least, hang a tracery of vine leaves along my porch, so exquisitely delicate that no sculpture can match it; if I have no conservatories, with their wonders, yet the sun and I together can build up a little tangled coppice of blooming things in my door-yard, of which every tiny

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floral leaflet shall be a miracle. Nay, I may make my home, however small it be, so complete in its simplicity, so fitted to its offices, so governed by neatness, so endowered by wealth of leaf and flower, that no riches in the world could add to it, without damaging its rural grace, and my gardeners — sunshine, frost and showers are their names — shall work for me with no crusty reluctance, but with an abandon and a zeal that ask only gratitude for pay."

I have already spoken much longer than I intended, but I feel that there is much more that could truthfully be said upon this subject at this time. In discussing this subject I have not sought to talk eloquently or to use elegant phrases. The subject does not admit of it, but it is an important one and is worthy of your most earnest consideration. While it may not seem, at first, as practical as the other essays to which you have listened, yet it is most deeply so, and if you do not heed some of these suggestions you will learn, when too late, that there is something else besides your fields which requires your earnest attention and most careful cultivation. If in making these few suggestions, I shall have succeeded in impressing you in the least with their importance, I am repaid; I am more than satisfied.

The census shows that New Hampshire is almost the only state suffering a decrease of population. Deserted houses in the byways remind us that this section of our country is becoming depopulated. This state of things must be changed. Our sons and our daughters must be made to stay with us, and this cannot be accomplished by force, simply, but by the persuasive means I have indicated, and which are so completely within our power.

Our valleys and our hill-sides must be made to blossom again, for educated labor will not only be relieved of half its burden, but it will be remunerating, for in its light we can not only till crops that are for our interest to attempt to raise, but can pursue such other branches of industry as shall be also remunerating. Our water power, much of which is now lying unimproved, must be made the means of giving employment to those now seeking it in other states. All barriers to increasing our population must be removed, and every means promoted whereby intelligence, prosperity and happiness can be increased, and all conventional forms and barriers between the aristocrat, too often ignorant himself, and intelligence, even though in rags, must be broken down. Our legislation must invite capital here by its liberality, rather

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than drive it elsewhere by a policy, which, though having the appearance of shrewdness at first sight, will surely prove most suicidal to all our interests in the future.

Entire exemption from taxation, for the first ten years of their existence, of newly constructed manufactories upon our waterfalls, would make them all centers of busy industry, which after the expiration of that time would be efficient aids to us in sharing our burdens of taxation. Every means must be resorted to to build up the interests of all classes and industries, and our people one and all must put forth their united and most earnest exertions to make our beautiful state wealthier, nobler and better.

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MOVABLE POULTRY HOUSE.

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FARMING IN NEW HAMPSHIRE.

The Secretary, early in the progress of this report, invited the veteran farmer of Warner, Levi Bartlett, Esq., to contribute to these pages a statement embodying the result of his observation regarding successful farming in our state. Mr. Bartlett replied that he had just engaged to furnish such a paper for the Department of Agriculture at Washington. It seemed probable the facts might be used both by the Board of Agriculture and by the Commissioners of Agriculture. By favor of J. R. Dodge, Esq., Statistician in the Department at Washington, proof sheets were furnished the Secretary from which the following statements are taken:

MR. BARTLETT'S STATEMENT.

A large majority of farmers here succeed in their business so far as to obtain a good living and pecuniary independence, and some accumulate very respectable fortunes. These facts are demonstrated by the numerous well finished and furnished houses, barns, and out-buildings for storing grain, carriages, farming implements, etc., to be seen in almost every town; and these facts bespeak a thrift and enterprise not even dreamed of by the most sanguine half a century ago.

On the other hand, in many of the long-settled towns in the hilly, rocky portions of the state, the population has gradually decreased during the past twenty years, as the late census returns plainly show; and in most of these towns there are numbers of once good farms that have been abandoned, the buildings have been removed, and the once productive fields turned out to pasturage, and will ultimately be covered with a forest growth, the seedlings of which spring up in these worn out soils; still, there are in all these towns good farms, and farmers who annually find

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"there is money in their business," even in the business of legitimate farming alone.

The spirit of emigration is an inherent principle in the "genus homo;" discontent among the farmers of the fertile soils of Illinois is as prevalent as it is among the same class residing on the granite hills of New Hampshire. To report fully "examples of profitable farming in New England" would require volumes; but for the information of the cultivators of the soil in different sections of our widely extended country, I will give a few "illustrative examples" in this section of New England.

During the past few weeks I have made excursions in several counties of this state, and noted down some facts connected with the farm practices in different sections, and on individual farms. We have no great staple crop like the wheat and corn of the West, or the cotton, sugar and rice of the South.

Our soil, climate and social condition compel us to pursue a mixed husbandry, to grow a variety of farm products, and these are varied according to the locality in which the farmer resides, and the requirements of the markets, and whether these are near or distant from his farm.

Some weeks since I made a visit to the town of Littleton, one hundred and twelve miles north of Concord, well up in the White Mountain region. While there I spent two days in four of those "northern towns," and visited a large number of farmers, and found them in the occupancy of good farms, farm buildings, and everything betokening thrift and enterprise. I think the drought was not so severe there the past season as in the more southern portions of the state, as the crops generally were good; corn, on many of the farms, yielding fifty to sixty bushels, shelled, per acre. The hay and grain crops were in similar proportions. This section of the state is noted for its large yields of potatoes. Immense quantities are annually worked up for the starch they contain. On one farm visited, there were over five hundred bushels grown on two acres. These, at the starch mills, command thirty-five cents per bushel, thus giving a return of $175 for the product of the two acres. I was told that much larger yields were harvested on some farms. The variety generally grown for starch is known as the "California potato." It is not a good table potato, but is preferred by the starch manufacturers. This is a good hay and grass-producing section, and large quantities of Timothy grass seed are raised, and the high price at which it has been sold for

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the past few years makes it a profitable farm product. Much more might be said of the prosperous condition of that section of our state; of its fine horses, herds and flocks; of its railroad facilities for transporting to market its wood, lumber, bark, charcoal, and numerous other products, all of which largely contribute to the increasing wealth of that part of the "Old Granite State."

More recently I visited Hanover, the town in which the New Hampshire Agricultural College is located, and spent a day in driving around among the farmers of that ancient town, the settlement of which commenced over one hundred years ago. There are large numbers of fine and productive farms. Much of the land consists of a finely comminuted and somewhat clayey soil, free from rocks, and easily cultivated. All of the farm crops cultivated in that section make good returns, especially wheat, both spring and autumn sown. From five or six of these farmers I obtained statements of the average yield per acre for a series of years. There were better crops in some seasons than in others. The lowest yield in any one season was twenty bushels. The largest, ninety-eight and one-half bushels on two acres of land. This was in 1860, a favorable season for the wheat crop in this section. Some of the records are of the crops for eleven years in succession on the same farms.

Mr. C. C. Foster the past season raised twenty-five bushels of winter wheat on one acre. The seed was obtained from the Department of Agriculture. Mr. Foster has forgotten the name. It very closely resembles the "White Touzelle winter wheat," imported from Marseilles, France, by the Department. The land planted with corn is heavily manured and followed by grass-seeds. As far as I can learn, there are but few, if any, sections of the country where larger average yields of wheat are grown than in the town of Hanover. A portion of the farmers in the town of Fairmount, Onondaga county, New York, obtain about the same average.

I will now give the farm practices of three of the most prominent farmers of Merrimack county, who have made farming profitable, but who differ somewhat in their practice and in the disposal of their products.

In 1856 Colonel David M. Clough, of Canterbury, purchased the farm he now occupies for the sum of $4,400. It contained about four hundred acres, two hundred of which were intervale, lying on the eastern bank of the Merrimack river, opposite the

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village of Boscawen Plain. The remainder was pasture and woodland. A few years previous to his purchase most of the wood and timber had been removed. For more than thirty years a widow had held a life-estate in the farm, and during this period it had been rented and largely cropped with corn and oats, which, with a portion of the hay, were annually sold, and no manure purchased. By this skinning process the farm had become badly worn; the buildings and fences were in a most dilapidated condition, and a large portion of this once fertile intervale had been turned out as pasture. To renovate the tillable fields, large quantities of muck and lime were composted. Muck and a clay marl, of which there are inexhaustible quantities on the farm, were used in the barn-yards, cattle and sheep hovels, and hog-yards. Fences were rebuilt with good boards and chestnut posts. The large, old farm-house was completely remodeled and renovated, both inside and outside, and additions made to it, and old barns were removed and splendid new ones erected.

When Colonel Clough came into possession of the farm there were about twelve tons of English and about the same quantity of natural or low-ground hay cut upon the farm, sufficient with some green feed, to winter twelve head of cattle, thirty sheep and two horses. He now winters upon an average ninety head of cattle, six horses, old and young, and one hundred and fifty sheep. He had at the time I was there sixteen hogs, about eighteen months old, and a large number of last spring's shoats. The old hogs will average not far from four hundred pounds each. For several years past the average sales have been about $1,500 for beef cattle; $500 for pork; sheep, lambs and wool, $400. A few years since he sold for slaughter two hundred sheep at seven dollars a head, aggregating $1,400.

The proceeds of the farm this year are one hundred and fifty tons of hay, eight hundred bushels of corn, eight hundred bushels of oats, and fifty bushels of wheat. The whole of the hay, most of the corn, and a large portion of the oats are fed to his farm stock and to horses from the cities to be wintered. Having lost several acres of his intervale land by the washing away of the soil, which is twenty feet deep at that place, he has, by the expenditure of over $600, prevented future inroads by sloping the banks and cobbling them with stone, drawn two miles. He has, during the fourteen years of his occupancy of the farm, expended over $4,000 in repairing the old and erecting new farm buildings. The

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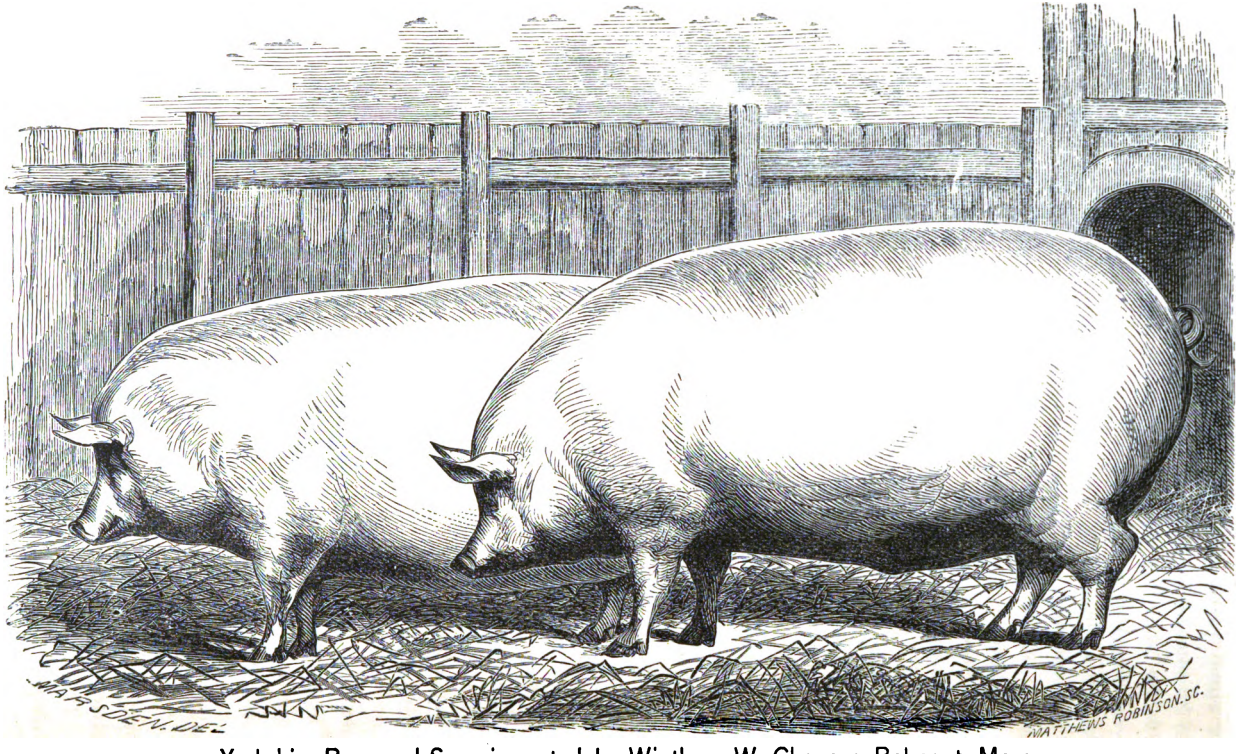

Yorkshire Boar and Sow, imported by Winthrop W. Chenery, Belmont, Mass.

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results of his farming in a pecuniary point of view are satisfactory, he having now a larger surplus of cash on hand than the farm originally cost him. Colonel Clough plows his land deep, manures high, and cultivates thoroughly, sows liberally of grass seeds and harvests corresponding crops.

About thirty years ago Mr. W. H. Gage purchased the Colonel Chandler farm, situated in the southern part of Boscawen. The farm contained about four hundred acres, one hundred acres of which were tillable interval, and about forty of low intervale, which yielded fair crops of hay of various qualities, from good to very poor. The remainder of the land was forest and pasture. He gave $6,000 for the farm, one-third cash, about all the available funds he possessed. The farm had been rented for a number of years, and was badly run down. The course of farming he has pursued for a number of years has been to feed the hay and grain raised upon the farm to his cattle, sheep and swine. The rearing of fine stock has been a specialty with him, especially oxen. For the past twenty-five years he has received more premiums for oxen, at our state and county fairs, than any other farmer in the county. In March, 1869, he sold two yoke of oxen for $800. In March, 1870, two yoke for $750. It has been a maxim with him to increase the fertility of his farm, and consequently his crops. This he has accomplished by selling most of the products of his farm in the form of beef, pork, mutton and wool, butter and cheese.

For many years past he has kept four to six hogs. When eighteen to twenty months old they have averaged, when dressed for market, about five hundred pounds each. The clear pork is salted and sold during the succeeding summer at the large manufacturing village of Fisherville, at an average of twenty-two cents per pound. Lard and hams from twenty to twenty-two cents. There are kept about thirty head of cattle, seventy-five to one hundred sheep, and two horses. Corn annually grown from six to eight acres; yield per acre fifty-five bushels. Oats follow the corn; yield sixty bushels per acre, about one-half of which are sold at an average of seventy cents per bushel.

The farm is now valued at $40,000, and other assets would bring his property well up to $50,000—the accumulations of a little over thirty years.

The third and last farm I shall refer to is that now owned by Joseph B. Walker, Concord. This farm has been under cultiva-

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tion about one hundred and forty years. Its original owner was the late Rev. Timothy Walker, the first settler and only minister of that town for fifty-two years. The farm came into the possession of his son, the late Judge Timothy Walker. Upon his death it became the property of his son, the late Captain Joseph Walker, whose son, Joseph B. Walker, the present owner of the farm, inherited it when only ten years old, he being the only surviviug member of the family. His guardian rented out the farm, which was thus managed for twenty years. In the mean time Joseph B. graduated at Yale College, studied law, and opened an office in Concord. He undertook to carry on the farm and his law business at the same time. After two years' trial of farming and law, he found one or the other must be given up. He had the good sense to quit law and become a farmer.

During the twenty years the farm had been leased, the buildings and fences were sadly out of repair, large portions of the fields were overrun with bushes, and there was a large decrease of hay and other crops during the period.

The farm consisted of about three hundred and fifty acres, one hundred of which were Merrimack river intervale, a large portion of which could be plowed, and with manuring would yield fair crops of corn and grain. About thirty acres were either covered by the waters of Horseshoe Pond, or were too wet for the production of hay. To drain the pond as far as practicable, he, fourteen years ago, cut a large and deep ditch from the east end of the pond across the intervale, nearly half a mile, to the river. The intervale is bounded on the north by the Merrimack river. The surface of the land on the river bank is about fourteen feet above the usual summer low-water mark. From the river the land gradually slopes southward to Horseshoe Pond. Forty-five rods south of the river Mr. Walker commenced excavating the soil, for the purpose of putting in a plank drain from that point to the river. The south end of the ditch was eight feet deep, but, as the ground rose gradually, before the bank of the Merrimack was reached, it was fourteen feet deep. Sound white pine plank were used for making a box or pipe — inside eight by twelve inches, ninety-six square inches — for the passage of the water from the open ditch to the river. This box drain has done so well during the fourteen years it has been in operation that forty-five rods more of similar drain have been put down during the past autumn, permitting the filling up of that length of open drain. From the covered

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drain to the pond the bottom of the open drain is boarded, the ditch being about three feet wide at the bottom. Before the floor was put in, rushes and aquatic grasses obstructed the flow of water, and were gradually filling the ditch.

I have thought it might be of *practical use* to be thus particular in describing Mr. Walker's process of lowering Horseshoe Pond several feet, thereby reclaiming about thirty acres of once almost worthless ground, and bringing it up to an average value of $100 per acre. This desirable object has been effected at an expense of about $800. During the eighteen years he has carried on the farm, the crops of hay and grain have been more than doubled.

His annual clip of hay is about one hundred and twenty tons, of which seventy to eighty tons are sold, varying in price, in different years, from $18 to $30 per ton.

As hay is his leading crop, grass immediately follows corn, without an intervening grain crop. Every autumn he plows about twelve acres of grass land, six acres of which are heavily manured and planted with corn; the following spring the other six acres are sown with oats. Average yield of each, fifty to sixty bushels; after the corn is harvested the land is plowed and sown with grass seeds. The oat ground is manured, plowed and sown with grass seeds. Several acres are also planted with potatoes, beans, crops, etc.

There are kept upon the farm four large oxen, six cows, two horses, and twenty or more cattle of various ages; most of the corn and oats are fed to the farm stock. Materials are carted into the barn-yard and cellars for composting with green manure. These materials are composted with large quantities of muck, and make valuable manure for his corn crops. He also purchases $200 worth of stable and some commercial manures. By these means he is annually increasing the fertility of his lands, notwithstanding the large quantities of hay sold.

He keeps six cows, the milk of which is sold at the house, put up in cans. The average sales of milk amount to $75 per month. The twelve acres of land seeded down in the fall yield a fair crop in August, similar in quality to second-crop hay. This is found to be prime feed for the cows during the winter, producing a large flow of milk.

Mr. Walker keeps an exact account of the expenses of the farm and of its income, which at the end of every month is carried

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from the day-book to the ledger, and in this way he is able, at the close of each year, to ascertain the profit and loss of his farming operations. The profits over the entire cost of carrying on the farm are quite satisfactory.

It may be said that the farms I have described are made up of the alluvial soils bordering the Merrimack river, free from rocks, and easily worked, when contrasted with the soils of the hill-farms; but thousands upon thousands of the farmers upon our hill-farms annually find there is "money in their business."

Had a judicious course of cultivation been pursued on a large portion of the now abandoned farms, they would have been to-day paying investments. The selling of hay and grain from the farms, close feeding of the mowing fields every autumn, and reckless waste of the manurial resources of the farms, together with the natural restlessness and love of change that seem to belong especially to Americans, are, I believe, the principal causes of the decrease in the rural population in so many of the farming districts of New England.

Mr. Bartlett does not include in the record the full number of successful farmers in the state, but makes reference only to such as he has met in his attendance on agricultural gatherings, his reading of agricultural journals and his visits among the people at their homes. To reach an authentic record of the agricultural resources of the state, we give the accompanying statistics of production.

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STATISTICS OF PRODUCTION.

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ROCKINGHAM

TOWNS.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Bushels of oats and barley.	Pounds of wool.	Bushels of peas and beans.
Atkinson	3,374	90	389	44	73	$36,130	.....	132	2,446	1,141	155	131
Auburn	4,208	97	362	138	75	30,220	676	190	3,489	1,688	694	244
Brentwood	7,063	137	666	362	119	53,241	56	129	6,352	2,508	1,293	300
Candia	14,151	205	970	239	118	69,170	607	44	6,806	2,692	649	504
Chester	7,213	127	612	351	107	49,780	97	95	5,654	2,430	1,279	331
Danville	2,900	79	355	67	70	32,555	163	68	2,248	610	248	256
Deerfield	21,446	336	1,947	727	223	132,313	2,803	495	10,151	3,056	3,063	980
Derry	12,130	236	1,186	204	143	80,580	76	239	7,462	3,366	468	396
East Kingston	3,459	86	319	147	99	11,007	39	144	2,600	1,589	520	206
Epping	8,915	163	823	399	122	64,943	343	390	6,371	3,535	1,960	470
Exeter	3,675	107	537	370	106	42,935	58	81	3,730	1,971	1,412	175
Fremont	4,149	65	371	168	68	28,547	34	104	2,596	1,082	593	204
Gosport	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greenland	5,839	153	575	178	236	60,543	79	229	5,230	3,261	602	355
Hampstead	4,725	130	376	52	80	39,122	.....	119	2,944	980	239	250
Hampton	3,908	158	574	202	179	44,860	36	344	6,585	1,605	482	324
Hampton Falls	5,786	128	753	289	145	51,996	166	84	4,645	2,514	2,122	239
Kensington	5,729	110	655	361	155	40,199	131	229	5,605	3,201	1,604	277
Kingston	4,353	89	376	233	108	30,412	96	322	3,969	1,230	800	307
Londonderry	11,710	247	1,219	190	117	89,366	105	500	7,769	5,110	.....	372
Newcastle	140	7	19	.....	6	2,625	.....	.....	75	40	.....	20
Newington	3,795	87	368	206	130	31,301	2	98	3,546	1,419	707	141
Newmarket	5,844	100	415	201	104	40,519	125	155	2,968	1,598	830	232
Newton	3,133	78	243	47	83	22,650	39	43	2,468	762	94	262
No. Hampton	5,363	180	573	220	178	49,082	7	84	5,987	4,024	1,022	215
Northwood	10,389	161	866	283	103	63,743	1,084	93	7,087	1,852	646	386
Nottingham	11,473	156	886	347	100	58,086	635	30	6,571	1,919	1,170	456
Plaistow	2,609	100	237	21	96	30,483	.....	43	1,554	988	87	183
Portsmouth	2,360	110	500	28	126	54,630	34	210	4,700	1,420	20	370
Raymond	11,084	130	780	439	86	52,737	300	83	5,630	1,875	1,856	385
Rye	3,691	169	506	121	186	45,715	316	121	4,590	3,096	90	234
Salem	8,358	177	666	71	137	54,635	53	142	3,473	2,227	65	275
Sandown	3,744	80	408	188	79	24,250	106	120	3,033	969	705	164
Seabrook	3,320	89	464	58	99	32,976	48	126	2,614	722	285	605
South Hampton	3,899	74	351	165	97	25,492	84	115	2,831	949	665	155
So. Newmarket	3,339	74	257	140	78	24,284	18	40	1,617	642	397	149
Stratham	7,151	189	605	371	136	67,758	180	367	6,746	3,117	1,424	150
Windham	7,418	141	529	176	88	42,676	.....	207	3,540	1,788	928	254
Totals	232,737	3845	21,738	7093	4255	1,711,560	18,596	6018	165,682	72,976	29,074	11,486

STRAFFORD

Barrington	10,688	245	1,477	486	192	$86,985	539	281	8,338	3,864	1,847	517
Dover	2,640	85	236	48	108	27,815	.....	23	1,773	1,663	.....	232
Durham	9,948	192	807	247	118	91,636	30	10	4,341	2,195	939	146
Farmington	5,145	95	600	205	60	35,615	419	18	2,597	234	677	2
Lee	8,993	174	756	628	110	57,980	325	168	5,095	1,739	3,022	312
Madbury	4,760	97	414	228	56	34,225	31	59	2,851	1,704	1,221	136
Middleton	3,806	51	315	116	51	23,347	85	8	1,122	927	592	146
Milton	8,517	123	631	405	104	51,732	351	60	3,099	1,658	1,584	333
New Durham	9,182	115	663	271	128	49,804	972	57	2,459	964	768	326
Rochester	11,368	222	1,341	661	236	80,120	425	169	8,433	3,016	2,215	494
Rollinsford	2,813	77	324	45	74	32,170	6	18	3,705	1,877	.....	119
Somersworth	1,294	29	124	47	48	9,365	.....	8	1,090	334	90	78
Strafford	14,911	251	1,933	788	217	103,193	2,021	217	7,903	4,358	2,797	502
Total	94,065	1,756	9,621	4,175	1,502	$683,987	5,204	1,096	52,806	24,533	15,752	3,343

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COUNTY.

Bushels of potatoes.	Orchard products reckoned in dollars.	Value of market garden products.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Tons of hay.	Pounds of hops.	Pounds maple sugar.	Pounds of honey.	Value of forest products, in dollars.	Value of animals slaughtered or sold, in dollars.	Estimated value of all farm products including betterments, etc.
6,920	$3,329	.....	13,320	425	86,318	1,103	.....	.....	.....	$5,520	$8,812	$41,476
8,265	876	$1,382	13,735	450	4,500	966	.....	.....	25	19,723	9,337	67,843
13,178	3,339	4,100	23,438	7,889	.....	2,144	.....	225	75	7,325	19,471	100,472
19,487	5,699	.....	51,280	2,880	.....	2,288	.....	*1,005	.....	16,099	22,565	117,413
10,645	3,685	1,286	15,610	2,905	274	1,576	.....	.....	30	7,910	14,299	76,604
6,769	1,813	.....	10,132	4,295	.....	1,008	.....	.....	.....	6,960	10,040	28,471
25,975	12,102	.....	125,750	5,600	.....	4,345	.....	*2,500	65	14,135	26,832	.....
18,752	3,386	2,185	16,965	775	106,575	3,304	.....	.....	.....	19,820	15,255	141,268
6,535	2,560	75	11,425	1,720	1,850	1,046	.....	.....	60	3,050	11,002	44,611
17,865	2,472	1,039	19,385	4,550	985	2,174	.....	.....	68	8,862	23,020	102,064
8,795	2,217	320	16,900	1,890	16,180	1,797	.....	.....	30	16,535	15,559	84,001
8,233	1,759	665	10,600	3,725	.....	975	.....	.....	50	14,052	10,491	56,862
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15,271	12,820	1,212	23,820	200	15,530	2,562	.....	.....	.....	.....	21,370	110,794
7,809	1,675	85	13,915	1,555	.....	1,181	.....	.....	.....	4,430	8,320	38,433
22,415	1,628	100	18,565	1,115	25,620	1,908	.....	.....	20	10,993	14,900	95,847
11,450	4,570	.....	14,270	130	53,590	2,373	.....	.....	80	6,465	18,820	82,794
6,030	6,770	.....	22,975	2,400	17,900	2,092	.....	.....	20	6,251	30,268	94,751
7,325	1,076	640	13,725	3,755	850	1,008	.....	.....	37	9,328	10,815	56,253
23,221	4,197	.....	32,625	125	52,004	2,895	.....	.....	900	14,955	19,205	146,794
830	135	1,800	780	.....	2,000	87	.....	.....	.....	.....	385	5,160
7,716	4,285	487	16,011	.....	7,625	1,504	.....	.....	.....	.....	10,855	59,042
9,345	1,307	349	18,800	880	4,905	1,809	.....	.....	.....	.....	13,970	64,519
6,387	1,520	144	9,769	950	200	770	.....	.....	35	7,244	7,659	38,259
17,750	2,837	300	15,275	3,155	33,700	2,128	.....	.....	.....	10,985	17,213	76,224
16,015	3,705	.....	30,358	5,050	100	2,459	.....	.....	.....	3,550	10,475	74,188
17,055	4,201	.....	24,125	5,038	.....	2,667	4	916	150	1,750	4,700	72,147
7,234	718	.....	10,440	1,015	10,300	903	.....	.....	.....	1,975	5,915	29,736
14,375	6,850	5,115	4,635	.....	85,895	1,966	.....	.....	.....	50	1,550	98,490
13,344	1,877	1,438	19,950	3,315	250	1,877	.....	.....	28	14,225	15,663	94,666
8,518	2,533	285	18,355	660	10,175	1,949	.....	.....	.....	4,281	12,718	76,296
6,356	1,800	1,710	20,975	810	15,804	2,014	.....	.....	1,675	18,295	12,519	100,137
7,258	514	25	7,580	3,415	.....	1,014	.....	20	455	7,005	6,280	30,694
46,149	2,552	70	14,908	300	4,417	1,576	.....	.....	80	18,247	16,411	69,370
6,412	2,965	70	13,705	660	2,725	1,269	.....	.....	.....	3,686	10,491	47,430
6,123	1,508	200	7,874	.....	2,590	984	.....	.....	20	4,060	6,976	38,140
17,557	6,880	2,000	28,343	980	16,722	2,592	.....	.....	.....	1,200	17,597	111,608
10,283	1,979	350	14,185	350	43,250	1,566	.....	.....	.....	3,450	12,126	65,619
483,647	124,137	37,433	744,503	72,962	622,834	65,879	4	6,128	3,993	292,413	493,887	2,639,078

COUNTY.

34,598	$3,802	$100	41,720	7,855	50	3,406	.....	.....	.....	$12,180	$19,275	$114,585
9,287	2,444	1,035	6,725	.....	20,777	1,192	.....	.....	.....	32,701	5,112	55,648
17,090	2,240	700	35,090	4,115	.....	3,880	.....	.....	.....	21,050	19,218	108,133
9,920	430	.....	11,744	2,675	.....	1,411	.....	.....	.....	975	4,050	43,498
19,977	1,883	.....	20,915	1,760	.....	2,361	.....	.....	.....	9,634	13,668	63,895
12,560	1,195	50	14,125	750	7,500	1,639	.....	.....	.....	1,970	10,545	50,985
9,480	707	.....	10,500	1,307	.....	758	.....	*250	.....	425	2,106	23,939
13,265	2,895	.....	21,626	6,930	336	1,688	.....	.....	.....	6,110	7,378	68,192
16,360	1,637	15	22,775	2,350	.....	1,757	.....	*475	285	1,652	6,121	62,233
31,864	8,495	790	37,434	3,320	11,870	3,320	.....	.....	.....	9,875	19,495	139,888
11,150	4,865	2,390	6,750	100	63,101	1,583	.....	.....	35	7,490	10,550	.....
4,995	515	.....	4,900	.....	3,556	457	.....	.....	20	1,580	4,123	29,980
31,165	3,775	.....	40,187	8,765	.....	4,113	.....	.....	.....	955	20,560	123,672
221,711	$34,883	$5,080	274,491	39,927	107,190	27,565	.....	725	340	106,597	142,201	884,648

* 534 gallons molasses; Deerfield, 928 do.: Milton, 69 do.; Rochester, 4 do.

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BELKNAP

TOWNS.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Bushels of oats and barley.	Pounds of wool.	Bushels of peas and beans.
Alton	18,025	192	1,589	734	242	$96,939	2,125	159	7,995	3,161	2,418	549*
Barnstead	14,805	249	1,808	937	291	106,514	2,516	120	8,338	4,387	2,234	517
Belmont	10,625	189	1,232	514	150	91,595	1,686	228	9,777	5,019	2,159	538
Center Harbor	4,422	72	548	316	71	35,683	610	75	3,350	1,531	886	159*
Gilford	17,728	233	1,725	1,679	193	131,705	2,701	514	11,837	3,558	8,233	872†
Gilmanton	23,840	295	2,182	1,088	277	120,633	2,632	24	9,912	5,047	3,659	745
Laconia	4,702	83	568	159	98	46,612	742	49	4,815	2,483	——	286
Meredith	16,586	218	1,848	759	271	111,495	2,759	198	10,087	3,247	2,355	568
New Hampton	13,375	190	1,148	1,245	159	79,055	1,623	424	7,315	4,237	4,039	337
Sanbornton	20,935	267	1,809	1,903	273	139,012	2,458	50	11,501	4,793	7,756	476
Tilton	8,612	156	829	753	95	52,375	838	91	5,900	3,501	3,256	341
Total	153,655	2,142	15,286	10,087	2,120	1,011,618	20,690	1,932	90,827	40,964	36,995	7,388

CARROLL.

Albany	2,986	67	288	32	48	$18,363	164	46	1,589	1,146	120	211
Bartlett	5,482	117	601	286	68	39,917	244	42	3,672	3,082	1,186	311
Brookfield	5,405	75	418	95	110	34,507	625	12	2,498	763	262	197
Chatham	3,848	86	673	390	59	37,606	38	128	3,377	3,534	1,326	263
Conway	9,955	363	1,437	471	199	107,431	467	206	11,178	10,208	2,090	620
Eaton	6,364	130	873	333	191	69,225	1,028	71	5,395	1,641	1,680	511
Effingham	9,025	175	1,024	185	110	59,973	527	188	6,294	3,729	534	404
Freedom	7,847	147	976	662	104	60,871	892	80	5,386	2,823	1,828	401
Harts Location	250	8	34	13	2	2,838	20	18	195	155	51	8
Hales Location	20	.....	1	.....	.....	50	.....	.....	10	.....	.....	7
Jackson	5,496	97	783	707	78	47,664	584	43	2,827	2,143	2,327	374
Madison	6,232	117	834	484	144	51,038	617	76	4,775	2,246	1,885	496
Moultonboro'	14,265	196	2,542	939	137	88,313	1,790	209	7,513	4,011	3,260	612
Ossipee	17,740	277	1,893	574	258	114,514	1,135	291	10,465	4,640	2,554	940
Sandwich	23,900	338	2,790	1,262	206	154,160	1,844	9	10,011	7,205	4,937	657
Tamworth	15,304	282	1,813	713	342	120,491	1,171	119	9,372	5,968	3,060	1,049
Tuftonboro'	12,635	155	1,409	596	134	71,363	1,954	112	7,970	3,720	2,687	490
Wakefield	11,871	150	1,267	412	211	71,226	1,387	140	5,041	3,252	910	286
Wolfeborough	16,694	278	1,769	620	324	119,698	2,451	184	9,931	2,571	1,811	576
Total	175,319	3,058	21,425	8,774	2,725	1,269,268	16,938	1,974	107,499	62,837	32,512	8,413

* 33 gals. molasses; Belmont, 456 do.; Gilford, 148 do.; Gilmanton, 428; Laconia, 24; New Hampton, 136; Sanbornton, 85; Tilton, 191—1,595 gallons.

† 60 bush. grass-seed; Centre Harbor, 22 do.; Gilford, 60 do.; Gilmanton, 56; Laconia, 41 Meredith, 58; New Hampton, 42; Tilton, 28—330 bushels.

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COUNTY.

Bushels of potatoes.	Value of orchard products.	Value of market garden products.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Tons of hay.	Pounds of hops.	Pounds maple sugar.	Pounds of honey.	Value of forest products, in dollars.	Value of animals slaughtered or sold, in dollars.	Estimated value of all farm products including betterments, etc.
23,960	$4,350	$25	30,763	4,195	90	3,850	.....	517	347	$36,129	$36,141	$173,660
30,290	2,655	.....	48,224	8,788	.....	4,131	.....	*321	72	4,204	41,093	152,210
17,799	4,138	.....	38,962	8,535	82,015	†2,944	.....	*5,165	249	16,295	36,785	165,980
51,755	2,722	.....	14,310	1,655	.....	†1,365	.....	1,975	256	4,265	9,397	52,225
28,455	9,087	100	47,840	10,330	30,907	†4,890	.....	*5,359	1,028	26,470	85,978	248,210
27,111	7,301	95	87,456	12,158	360	†4,921	6	*2,681	88	8,849	45,438	170,670
9,215	2,230	25	15,775	3,005	40	†1,522	.....	*2,710	45	6,877	12,490	66,157
25,616	5,698	90	37,106	9,423	1,885	†4,369	.....	5,508	349	15,333	29,168	175,920
19,042	4,339	.....	39,375	4,765	2,690	†2,992	.....	*6,587	493	16,545	18,465	137,240
24,475	13,884	2,351	50,515	13,500	950	†5,204	3	*6,525	609	7,998	58,508	215,204
12,281	3,055	.....	27,550	4,595	3,700	†2,456	.....	*2,430	176	11,965	18,255	108,915
269,999	59,459	2,686	437,876	80,949	122,607	38,644	9	39,778	3,722	155,030	391,718	1,636,391

COUNTY.

6,087	$1,113	$....	7,365	.....	.....	834	.....	‡2,799	50	$529	$3,929	$23,131
14,414	4,923	.....	19,066	325	400	1,893	.....	‡9,240	150	1,767	7,922	68,312
8,725	930	75	9,680	1,050	25	1,119	.....	‡1,661	.....	2,475	6,182	37,057
9.154	2,990	.....	20,668	650	.....	1,663	500	‡600	100	1,186	6,407	65,651
29,023	2,847	.....	47,470	1,325	2,450	4,647	.....	‡4,805	1,090	3,415	19,811	143,299
12,856	8,236	.....	28,400	100	.....	2,014	.....	5,424	314	3,642	15,574	92,614
14,592	1,663	.....	20,830	1,040	.....	2,388	350	‡225	88	.....	12,068	73,306
11,722	2,670	.....	19,880	425	.....	2,315	.....	‡970	.....	.....	16,296	69,402
575	300	.....	1,100	.....	.....	110	.....	1,025	.....	170	300	3,502
75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80
17,249	3,895	.....	26,425	.....	.....	2,037	.....	‡4,525	.....	1,984	6,700	72,243
11,611	5,571	.....	28,600	.....	.....	1,775	.....	5,316	.....	3,487	12,715	78,478
21,179	2,861	.....	32,790	3,010	3,325	3,351	.....	‡10,723	.....	.....	24,601	109,622
37,651	6,139	65	47,635	850	.....	4,175	500	9,291	600	9,926	26,596	155,503
25,730	5,276	.....	49,905	1,540	.....	6,393	.....	‡52,850	30	.....	40,003	181,475
26,838	11,342	.....	61,100	200	.....	4,452	.....	44,291	328	9,158	36,786	196,199
21,923	1,306	.....	27,640	1,992	70	3.178	.....	‡13,968	90	.....	12,335	89,866
23,240	2,758	.25	21,944	2,064	.....	2,737	.....	1,080	.....	11,339	16,228	100,695
35,955	2,743	1,055	33,645	2,055	3,862	4,454	.....	7,395	112	11,663	21,857	146,699
328,599	67,563	1,220	504,143	16,626	10,132	49,545	1,360	176,188	2,952	60,741	286,310	1,707,134

‡ 61 gallons molasses; Bartlett, 523 do.; Chatham, 842 do.; Conway, 992; Effingham, 8; Freedom, 63; Hale's Location, 885; Madison, 23; Ossipee, 43; Tamworth, 14—3,424 gallons.

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MERRIMACK

TOWNS.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Bushels of oats and barley.	Pounds of wool.	Bushels of peas and beans.
Allenstown	3,192	69	268	96	49	$22,375	242	43	2,254	1,875	419	120
Andover	8,456	95	787	1,496	104	44,889	638	233	3,989	2,164	6,928	192
Boscawen	9,274	149	626	1,156	104	54,839	220	109	6,107	5,000	6,174	215
Bow	8,101	179	880	414	100	63,310	846	70	7,623	3,942	1,061	138
Bradford	15,398	198	1,277	2,539	179	76,375	1,246	282	7,591	3,868	10,797	137
Canterbury	18,644	249	1,708	1,834	161	107,729	1,118	76	9,076	5,921	7,809	358
Chichester												
Concord	20,090	520	2,205	1,024	698	181,761	1,232	673	20,650	15,802	3,810	751
Dunbarton	16,533	178	1,409	685	119	78,612	772	839	7,172	4,614	2,192	171
Epsom	13,044	171	1,192	754	113	72,803	1,977	143	6,853	4,000	2,419	204
Franklin	7,376	135	614	1,343	99	46,985	403	87	6,935	5,056	6,244	179
Henniker	18,612	258	2,110	1,218	310	112,843	2,021	394	11,007	3,228	3,927	161
Hill	9,278	114	585	1,068	62	39,653	576	58	3,676	1,983	3,255	104
Hooksett	4,446	141	509	111	86	38,710	265	197	4,593	3,906	306	184
Hopkinton	17,590	262	1,884	1,324	219	128,375	1,600	447	14,618	6,775	6,630	374
Loudon	19,180	315	2,010	1,586	195	122,332	2,289	111	11,755	5,890	6,644	334
Newbury	12,231	134	967	1,289	118	57,060	1,309	90	4,387	2,854	4,802	82
New London	11,100	139	1,025	571	122	58,070	1,268	92	3,454	3,088	2,427	125
Northfield	9,638	139	866	910	89	56,866	1,024	97	6,210	2,538	3,083	169
Pembroke	9,950	166	901	158	156	63,420	867	181	7,593	5,458	1,146	277
Pittsfield	10,648	190	1,172	408	126	69,625	2,070	40	6,801	2,086	1,822	338
Salisbury	17,638	172	1,034	3,830	206	88,573	1,149	254	8,167	3,166	16,215	373
Sutton	8,673	92	730	1,073	63	44,764	814	58	2,747	2,058	3,827	95
Warner	20,792	248	1,684	3,351	108	113,967	1,834	194	10,388	3,290	16,711	324
Webster	11,687	150	870	2,546	85	68,608	1,223	274	6,439	2,426	14,456	181
Wilmot	15,773	176	1,134	2,044	148	74,105	1,258	114	3,957	3,879	4,975	45
Total	317,344	4,639	28,447	32,828	3,819	1,886,649	28,215	5,166	184,062	104,887	138,079	5,631

HILLSBOROUGH

Amherst	12,330	246	1,142	247	263	$88,906	692	560	8,618	3,960	862	316
Antrim	11,739	149	1,015	699	165	65,091	490	262	4,671	3,181	2,677	267
Bedford	11,781	291	1,280	106	296	116,945	443	607	7,815	5,037	89	230
Bennington	3,299	38	268	222	35	17,194	140	132	1,078	687	831	64
Brookline	1,819	34	217	10	36	13,120	12	41	1,190	586		65
Deering	12,963	165	1,167	1,057	184	64,376	1,699	42	5,222	2,266	3,733	212
Francistown	10,798	140	693	962	202	44,858	1,142	43	4,388	1,631	2,705	177
Goffstown	10,606	271	1,405	297	326	104,232	500	395	10,339	4,380	600	300
Greenfield	7,611	83	515	617	108	35,228	342	84	3,375	1,287	1,975	118
Hancock	10,409	115	1,010	706	148	45,364	307	213	4,011	2,605	1,832	216
Hillsborough	15,945	199	1,530	886	170	88,326	782	215	7,415	3,451	3,210	280
Hollis	10,805	203	1,171	123	237	72,425	26	1,090	7,769	6,844	511	320
Hudson	9,443	205	1,051	211	302	72,775	86	556	8,951	5,018	855	367
Litchfield	2,560	80	366	76	104	28,545	1½	316	4,305	3,430	484	111
Lyndeborough	10,439	130	951	284	103	67,323	882	284	5,892	1,522	1,619	260
Manchester	5,144	233	550	90	332	73,088	284	742	6,642	4,961	223	469
Mason	8,949	35	795	120	124	52,443	448	55	4,090	2,084	281	222
Merrimack	8,798	165	816	121	225	61,385	23	1,007	6,851	5,312	111	321
Milford	10,547	203	1,077	89	183	75,514	512	324	10,034	3,490	257	233
Mont Vernon	6,942	123	484	82	136	38,865	552	102	3,015	1,555	234	127
Nashua	6,069	154	675	132	157	44,935	92	862	5,549	3,278	277	274
New Boston	15,947	235	1,354	454	274	98,269	1,158	462	7,545	3,675	1,449	270
New Ipswich	9,620	149	872	130	187	58,370	575	72	3,799	2,421	400	218
Pelham	8,049	171	837	160	292	61,745	45	786	6,007	2,229	400	219
Peterborough	15,925	218	1,588	540	236	85,861	553	280	5,241	4,830	1,781	298
Sharon	2,928	32	259	83	48	14,909	75	10	944	918	190	26
Temple	9,599	90	592	221	76	43,852	989	116	4,373	2,040	968	119
Weare	23,392	296	1,879	2,814	442	134,517	1,452	153	10,734	3,630	11,066	418
Wilton	10,391	155	960	100	134	73,493	991	527	5,337	3,653	176	145
Windsor	2,604	29	183	137	14	10,097	64	17	631	286	396	26
Total	287,451	4,637	26,702	11,776	5,539	1,852,051	15,357	10,355	165,831	90,347	40,192	6688

* 800 bushels sweet potatoes.

† 151 bushels seed; Bennington, 100 do.; Deering, 10 do.: Francestown, 20 do.; Greenfield, 40 do.; Hancock, 5 do.; Hillsborough, 6 do.; New Ipswich, 6 do.; Peterborough, 8 do.; Temple, 3 do.; Weare, 10 do.; total, 359 bushels.

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COUNTY.

Bushels of potatoes.	Value of orchard products.	Value of market garden products.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Pounds of hops.	Tons of hay.	Pounds maple sugar.	Pounds of honey.	Value of forest products.	Value of animals slaughtered or sold for slaughter.	Estimated value of farm products, including betterm'ts.
4,440	$655	$544	8,675	375	1,535	734	.....	.....	.....	$6,300	$7,466	$42,234
13,712	2,997	.....	12,165	6,185	194	2,157	4	3,513	465	5,785	12,516	66,257
11,003	5,998	806	20,044	7,981	1,150	1,212	.....	175	260	7,876	13,641	94,273
10,040	3,504	210	31,600	2,315	2,588	2,116	11,310	.....	.....	48,009	20,076	153,546
25,718	3,881	.....	28,929	3,010	1,097	3,522	810	6,510	310	10,416	15,591	106,484
21,463	8,094	182	35,212	19,790	.....	4,279	.....	9,865	982	15,930	26,416	172,403
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
33,651	5,315	16,312	68,670	12,280	112,406	6,577	.....	250	471	19,500	45,677	338,068
18,761	2,794	.....	32,751	3,124	.....	3,070	.....	.....	.....	2,145	12,020	91,111
16,880	996	.....	25,134	7,230	180	2,844	2,700	.....	.....	1,102	19,210	92,492
8,845	2,022	700	14,030	4,695	10,150	1,714	.....	242	55	8,900	17,460	79,000
16,934	3,594	.....	40,345	7,958	645	4,050	.....	4,080	125	6,699	38,881	139,877
7,884	1,603	.....	11,615	3,000	.....	1,588	.....	1,565	120	2,722	5,789	53,539
9,560	1,676	319	14,370	650	4,110	1,375	2,200	.....	.....	19,467	10,828	118,708
19,158	6,405	700	54,850	17,915	585	4,519	.....	2,384	187	12,764	38,938	186,552
30,102	5,995	75	35,115	19,163	25	5,129	.....	12,260	.....	1,615	32,817	186,307
19,030	2,573	.....	22,650	1,160	40	2,564	.....	11,015	361	6,380	14,006	81,174
25,085	2,273	.....	25,385	1,500	40	2,179	.....	6,110	117	3,168	12,205	78,768
13,660	3,489	.....	19,235	5,740	.....	2,607	.....	350	807	7,025	10,760	95,311
15,510	4,140	1,001	23,055	3,285	5,298	2,181	.....	.....	108	21,455	28,652	126,170
14,082	1,847	.....	28,065	8,725	7,667	2,753	.....	280	101	392	40,178	87,973
17,266	12,042	12	31,585	12,335	25	3,629	.....	3,515	705	6,867	18,237	129,914
14,139	2,455	266	21,185	5,239	.....	1,746	.....	9,463	238	9,563	10,767	68,532
17,502	6,634	583	48,874	1,444	480	4,288	.....	4,895	532	17,437	27,132	164,472
9,745	6,503	653	25,476	10,744	9,000	2,407	.....	500	208	12,063	19,277	110,628
35,480	2,860	.....	26,501	1,860	.....	3,227	.....	12,830	478	4,505	16,435	97,278
429,650	100,345	22,363	705,516	167,703	147,215	72,467	17,024	89,802	6,630	258,805	575,055	2,961,071

COUNTY.

16,531	$5,090	$130	36,715	1,400	80,350	3,151	.....	.....	.....	$16,795	$16,380	$136,746
13,130	4,525	.....	29,990	2,585	.....	†2,621	.....	‡4,105	.....	13,424	20,676	92,733
19,352	3,107	8,322	19,790	300	239,515	3,236	.....	.....	83	13,260	22,036	158,299
3,498	569	.....	6,533	440	.....	†585	.....	‡400	.....	3,437	3,214	21,487
2,435	1,535	550	4,360	625	350	400	.....	.....	.....	9,280	3,707	16,077
16,361	1,935	262	28,345	3,448	10	†3,015	30	$4,235	70	13,571	17,338	98,846
8,476	3,154	.....	24,505	4,364	.....	†2,474	200	‡3,775	268	9,785	20,679	51,556
16,192	5,747	3,131	32,515	1,665	45,977	3,292	517	74	102	27,730	24,508	160,860
7,180	1,140	.....	15,970	1,845	.....	†1,330	.....	‡1,549	.....	5,141	8,273	57,354
10,744	4,505	.....	26,410	1,230	.....	2,213	.....	‡6,165	.....	8,593	14,766	84,367
20,853	5,511	.....	40,640	3,060	150	†3,691	.....	‡9,865	20	13,018	31,536	133,496
11,368	10,436	480	25,510	4,505	88,310	2,575	.....	‡2,370	56	559	16,183	133,321
16,620	3,213	880	34,745	400	73,700	2,604	.....	.....	45	10,522	13,819	118,538
5,217	846	192	12,075	400	2,220	948	.....	.....	.....	11,500	7,785	46,527
*8,082	6,197	200	28,430	1,795	60,452	2,262	1,900	‡3,386	146	8,010	15,783	113,484
21,093	3,672	11,137	24,284	200	54,012	1,911	.....	.....	263	11,338	29,015	148,403
10,471	2,488	3,765	26,369	200	24,299	2,005	....	‡	.....	3,555	12,376	92,682
11,771	1,536	865	30,925	300	31,910	2,179	.....	.....	74	13,150	11,580	94,496
11,446	6,973	3,346	17,690	700	137,948	2,537	2,400	.....	47	11,819	13,636	142,569
7,142	2,580	560	16,190	260	24,486	1,591	500	.....	40	5,715	9,004	72,973
9,528	2,812	3,741	11,920	400	81,910	1,607	.....	.....	160	.....	10,572	88,550
11,904	5,555	.....	36,575	6,860	812	†3,710	800	‡235	618	26,301	29,313	147,973
12,819	1,515	15	30,505	650	54,300	2,423	.....	.....	.....	6,530	11,560	92,995
13,595	7,425	850	29,705	1,250	60,895	2,295	.....	.....	25	15,460	13,065	109,965
17,182	4,846	200	35,334	3,256	11,135	†3,053	.....	†5,757	338	12,262	23,283	117,792
3,435	295	.....	6,860	455	.....	.....	.....	.....	.....	300	3,098	18,572
8,057	1,456	.....	20,230	1,664	55,408	†1,633	.....	‡1,000	455	11,696	7,844	71,727
17,899	8,107	220	54,139	11,873	1,841	†4,886	.....	‡2,417	1,032	14,358	34,830	192,399
14,715	4,214	125	13,575	600	175,906	2,888	.....	.....	.....	4,255	14,334	132,392
2,240	242	.....	4,045	410	.....	†436	.....	‡325	.....	3,304	2,289	15,304
350,136	111,226	38,971	704,879	57,140	1,305,894	67,551	4,347	45,658	3,842	304,668	462,482	2,962,483

‡ 92 gals. molasses; Bennington, 33 do.; Deering, 277 do.; Francestown, 149 do.; Greenfield, 164 do.; Hancock, 731 do.; Hillsborough, 30 do.; Hollis, 18 do.; Lyndeborough, 98 do.; Mason, 46 do.; New Boston, 46 do.; Peterborough, 396 do.; Temple, 73 do.; Weare, 262 do.; Windsor, 24 do.; total, 11,881.

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CHESHIRE.

TOWNS.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Bushels of oats and barley.	Pounds of wool.	Bushels of peas and beans.
Alstead	17,714	221	1,154	3,196	268	$106,440	275	176	8,388	8,501	9,624	18
Chesterfield	19,045	302	1,567	743	300	124,530	140	122	14,487	12,055	2,595	206
Dublin	15,474	181	1,005	1,449	69	79,440	868	108	3,874	3,246	6,525	125
Fitzwilliam	12,709	158	770	170	121	49,008	154	173	2,241	2,119	284	.....
Gilsum	6,413	70	442	1,331	56	37,720	16	94	2,714	1,903	6,023	2
Hinsdale*	7,381	126	812	266	147	57,695	149	972	7,870	3,470	1,008	101
Jaffrey	17,722	200	1,072	582	392	72,375	209	70	3,195	3,853	2,064	3
Keene	11,445	235	1,223	1,604	290	102,489	153	710	8,520	5,892	5,497	242
Marlborough	8,007	112	601	471	46	48,965	249	110	2,446	2,331	2,627	70
Marlow	9,241	133	632	1,262	68	47,005	314	19	2,425	2,455	3,285	52
Nelson	8,820	89	525	1,563	31	39,794	344	9	964	2,666	6,625	47
Richmond	13,503	140	799	198	151	59,605	106	294	3,980	2,569	645	23
Rindge	14,476	201	879	339	143	56,679	179	62	1,931	3,481	1,800	.....
Roxbury	3,438	35	218	434	38	17,652	205	131	1,042	459	1,683	35
Stoddard	12,897	84	595	1,152	62	38,812	47	29	895	2,699	6,804	17
Sullivan	7,514	73	297	1,876	40	35,834	20	.....	1,253	1,962	8,701	16
Surry	6,301	82	409	1,153	120	34,455	45	73	3,985	3,155	6,083	.....
Swanzey	11,259	199	939	780	134	78,691	258	1,686	5,206	3,864	3,677	162
Troy	5,666	66	425	28	77	32,885	203	125	1,208	1,067	117	.....
Walpole*	19,433	408	1,278	9,219	441	141,615	1,001	514	38,660	33,373	39,103	61
Westmorl'nd.*	18,095	288	1,691	2,702	384	130,937	265	249	22,152	19,514	6,062	246
Winchester*	13,964	220	1,281	795	174	90,991	330	613	7,633	5,007	3.070	231
Total	260,517	3,623	17,619	31,313	3,552	1,484,769	5,530	6,339	145,069	125,496	123,837	1,657

SULLIVAN

Acworth	18,040	272	1,206	3,809	121	$90,880	1,096	124	5,948	10,757	19,797	232
Charlestown*	15,604	328	1,238	3,651	241	115,477	967	592	23,585	21,184	21,836	273
Claremont	22,842	412	1,870	4,049	302	155,046	1,542	1,444	24,953	21,379	23,213	148
Cornish	20.317	376	1,834	4,501	287	141,561	2,698	312	15,327	13,878	26,378	209
Croydon	15,268	200	1,204	1,239	150	70,048	496	67	4,338	6,629	6,359	99
Goshen	8,513	140	782	888	167	53,248	1,002	96	2,545	4,221	5,975	136
Grantham	9,445	138	688	1,713	115	50,590	475	22	2,505	4,152	8,326	154
Langdon	7,175	137	695	1,493	81	56,433	284	177	8,872	8,027	8,090	90
Lempster	11,359	165	994	911	66	61,350	506	77	2,411	6,100	4,818	170
Newport	18,533	317	1,843	1,372	371	137,501	856	398	10,807	14,520	8,140	322
Plainfield	24,683	389	1,750	8,980	319	143,715	3,684	212	17,309	15,469	44,246	136
Springfield	13,720	167	1,079	1,439	209	72,033	998	20	2,408	4,689	2,408	209
Unity	14,437	225	1,153	2,397	122	94,783	948	126	6,053	8,323	15,281	264
Sunapee	8,627	135	887	506	182	62,872	1,018	.....	3,578	3,902	2,687	118
Washington	11,964	150	916	1,301	77	59,870	321	42	2,514	3,146	5,317	118
Total	220,521	3,551	18,139	38,249	2,810	1,365,407	16,891	3,709	133,153	146,387	202,871	2678

* 95,850 lbs. tobacco; Walpole, 26,600 do.; Westmoreland, 615 do.; Winchester, 30,821; Charlestown, 4000 lbs. tobacco.

† 45 gals. molasses; Gilsum, 42 do.; Hinsdale, 15 do.; Keene, 151 do.; Marlborough, 22 do.; Marlow, 110 do.; Nelson, 652 do.; Richmond, 652 do.; Roxbury, 30 do.: Sullivan, 28 Swanzey, 98 do.; Westmoreland, 169 do.; Winchester, 366 do.; total, 1,728 gallons.

‡ 8 bushels of seed; Chesterfield, 36 do.; Marlborough, 5 do.; Surry, 2 do.; Walpole, 39 do.; Westmoreland, 77 do.; Winchester, 6 do.; total, 116 bushels.

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COUNTY.

Bushels of Potatoes.	Value of orchard products.	Value of market garden products.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Tons of hay.	Pounds of hops.	Pounds of maple sugar.	Pounds of honey.	Value of forest products.	Value of animals slaughtered or sold to be slaughtered.	Estimated value of all farm products, including betterments, &c.
18,060	$3,594	.....	41,300	1,200	.....	‡4,697	.....	38,120	.....	.....	16,665	116,490
16,412	9,423	.....	50,500	9,395	20	‡4,262	.....	10,885	115	.....	25,945	145·202
14,835	2,128	$125	34,225	2,260	1,980	2,992	400	†25,640	.....	11,635	8,915	76,705
13,490	450	.....	19,500	200	.....	1,998	10	.....	.....	4,580	3,945	53,606
6,943	2,095	95	14,565	2,085	240	1,413	5	†8,891	15	6,230	4,271	52,145
6,727	1,529	.....	17,075	3,220	12,837	2,091	1,900	†550	104	9,814	23,397	118,408
15,847	145	.....	20,550	100	200	2,909	.....	3,110	.....	2,126	4,304	67.138
16,134	4,715	1,935	34,720	5,073	18,361	3,646	.....	†10,325	.....	14,358	17,340	144,434
7,335	1,825	155	26,731	1,800	506	1,759	.....	†4,940	.....	10,290	6,365	60,330
12,210	115	5	18,575	2,320	1,118	‡2,083	.....	26,100	100	11,675	5,065	65,175
11,882	108	205	17,030	470	2,000	1,633	.....	†8,087	.....	3,943	4,763	27,362
10,575	2,470	.....	28,100	3,975	.....	1,997	.....	†5,090	.....	.....	13,085	69,640
15,852	70	.....	3,680	100	50	2,194	.....	.....	.....	2,955	680	56,395
4,090	1,085	10	5,600	120	.....	601	.....	†2,941	.....	3,470	4,605	27,427
12,115	433	190	16,105	100	.....	1,694	.....	10,855	.....	4,667	6,240	46,404
8,395	545	.....	11,635	590	.....	1,596	.....	†13,800	....	12.130	3,655	56.088
10,990	2,555	.....	14,600	800	.....	‡1,524	.....	†9,600	.....	.....	7,310	46,375
14,030	1,139	.....	22,416	1,950	600	2,640	.....	†3,655	238	15,966	13,897	93,081
8,080	50	.....	14,530	.....	.....	541	.....	.....	.....	1,530	1,696	31,875
15,355	7,610	.....	50,000	4,670	145	‡6,657	.....	†10,500	.....	50	52,765	254,095
15,055	6,337	.....	49,525	17,865	375	‡5,066	.....	†15,373	270	.....	31,918	148,139
13,496	6,126	.....	25,510	5,155	2,623	‡3,103	50	†5,935	155	13,307	30,525	131,445
364,008	$55,665	$2,720	536,472	63,448	51,581	57,096	2,365	214,387	997	128,726	287,351	1,887,856

COUNTY.

21,962	$2,945	$	38,140	2,115	.....	§4,418	.....	56,500	660	$9,797	13,127	$90,200
15,624	4,454	45	58,720	13,580	4,280	§4,793	2,556	‖11,151	515	18,338	35,464	152,188
20,359	2,472	62	64,098	21,098	6,895	§5,623	....	22,810	16	2,000	31,733	189,731
20,028	6,456	.....	52,920	10,305	2,500	§5,186	.....	‖19,535	245	11,175	32,081	172,664
16,885	1,757	.....	37,065	2,870	17	2,956	.....	25,916	328	3,140	11,290	82,475
19088	2,600	140	26,915	2,785	.....	§2,000	.....	‖18,910	.....	2,031	10,897	60,092
12,585	1,575	.....	19,070	2,720	.....	2,121	.....	‖13,110	247	5,495	9,295	63,110
7,051	3,077	.....	22,655	3,955	25	§1,976	.....	‖16,300	390	11,650	15,747	74,812
15,613	1,525	.....	28,610	3,570	125	2,521	.....	‖20,055	100	4,189	10,660	50,910
30,170	7,299	20	67,979	11,326	2,720	§4,998	10	‖33,290	666	20,615	26,294	148,156
23,685	5,110	250	44,030	11,350	1,050	§6,083	.....	‖11,840	480	2,620	33,860	179,075
26,938	2,713	.....	28,825	3,618	.....	§2,798	.....	‖18,500	366	6,475	11,120	72,552
19,823	5,025	.....	39,480	4,584	600	§3,892	.....	‖28,688	330	8,123	20,194	109,418
16,775	2,219	.....	29,585	4,113	.....	§2,213	.....	‖18,265	290	5,105	9,768	56,475
18,613	2,102	.....	27,790	2,220	.....	§2,481	.....	32,045	305	11,639	9,836	57,319
285,169	51,329	517	585,882	100,139	18,212	54,059	2,566	346,915	4,937	119,292	281,366	1,559,177

§ 13 bushels seed; Charlestown, 70 do.; Claremont, 14 do.; Cornish, 20 do.; Goshen, 29 do.; Langdon, 22 do.; Newport, 36 do.; Plainfield, 19 do.; Springfield, 7 do.; Unity, 42 do.; Sunapee, 20 do.; Washington, 5 do.; total, 297 bushels.

‖ 75 gals. molasses; Cornish, 384 do.; Goshen, 403 do.; Grantham, 66 do.; Langdon, 29 do.; Newport, 342 do.; Plainfield, 345 do.; Springfield, 265 do.; Unity, 22 do.; Sunapee, 94 do.; total, 2,025 gallons.

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GRAFTON

TOWNS.	No. acres improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Oats and barley or buckwheat.	Wool, (in lbs.)	Bushels peas and beans.
Alexandria ...	14,382	195	1,077	1,451	94	62,435	867	326	5,118	4,140	5,212	256
Ashland	3,853	89	427	460	40	31,858	403	147	3,213	3,270	2,568	55
Bath.....	18,639	313	1,427	4,503	189	148,774	2,728	330	8,011	25,357	26,871	227
Benton	3,620	64	341	352	33	26,225	587	10	495	4,427	2,320	99
Bethlehem ...	10,955	259	914	622	101	87,616	2,397	221	1,871	25,970	2,235	566
Bridgewater..	7,887	100	625	1,177	76	68,922	690	56	2,938	2,923	5,062	138
Bristol	8,067	100	546	660	77	36.895	458	185	4,037	3,129	3,284	116
Campton	19,374	281	1,453	1,868	156	96,971	1,101	162	8,632	12,965	8,635	524
Canaan.....	20,403	279	1,293	3,159	176	96,267	1,812	480	6,074	12,667	17,397	311
Danbury	12,422	140	1,071	911	88	56,720	845	289	3,819	2,960	6,182	124
Dorchester ...	9,531	125	747	1,156	46	52,116	403	73	2,259	4,556	4,760	117
Ellsworth.....	2,045	41	215	135	18	14,883	35	.....	881	1,219	963	98
Enfield.....	15,425	221	1,122	4,684	188	87,909	2,721	274	5,674	9,007	20,087	256
Franconia	5,369	127	459	383	88	41,985	1,039	.....	959	12,369	1,479	258
Grafton	18,005	154	1,224	1,750	92	73,124	1,086	89	4,258	6,816	6,876	92
Groton.....	9,982	107	676	1,428	68	50,144	289	81	3,004	3,435	6,431	181
Hanover.....	21,798	337	889	8,826	195	129,093	3,034	135	13,722	23,051	49,034	163
Haverhill	24,300	520	1,910	6,773	268	185,259	4,380	741	16,370	34,335	36,059	219
Hebron.....	5,712	69	455	920	34	34,651	241	77	2,645	2,786	5,126	33
Holderness ...	10,454	161	1,098	704	110	78,173	1,245	127	7,092	12,397	2,687	297
Landaff.....	14,071	220	1,001	2,587	112	91,201	3,090	102	2,474	21,961	10,031	417
Lebanon.....	16,489	318	1,149	8,344	302	120,103	3,241	685	15,931	14,146	47,970	298
Lincoln.....	549	11	44	11	1	4,470	15	20	50	625	37	46
Lisbon.....	17,437	385	1,521	2,482	205	116,787	3,518	291	3,948	26,660	11,556	367
Littleton	17,637	313	1,738	1,848	169	121,915	3,376	131	6,263	27,688	6,195	410
Lyman	10,363	197	948	1,476	190	59,170	2,302	77	2,927	11,885	5,662	144
Lyme	18,266	293	1,194	9,215	190	137.522	3,474	154	11,755	26,092	51,670	431
Monroe.....	8,216	140	749	834	64	52,205	1,320	102	2,291	9,295	5,507	44
Orange.....	5,624	49	386	512	41	25,828	426	.....	783	2,260	2,794	86
Orford.....	16,315	267	1,414	4,716	202	118,267	3,903	435	11,967	20,734	27,000	381
Piermont.....	10,826	233	767	4,832	109	172,200	2,766	44	6,110	20,768	29,820	236
Plymouth.....	10,103	199	924	1,517	101	71,064	109	103	6,527	9,756	7,381	133
Rumney	11,027	195	885	1,286	106	71,071	461	197	5,790	7,955	5,716	285
Thornton.....	13,462	210	931	770	94	70,122	328	109	5,997	9,000	4,587	441
Warren	8,992	168	608	1,212	85	52,920	1,132	223	2,715	7,184	6,938	283
Waterville ...	655	13	37	2	5	2,893	15	6	95	265	4	14
Wentworth...	10,307	146	891	1,095	116	65,395	1,066	280	4,150	6,77	4,495	270
Woodstock....	504	65	319	307	26	28,054	20	64	2,224	2,464	1,587	247
	457,566	7,104	33,466	85,185	4,264	2,841,207	56,023	6,826	943,069	433,194	442,218	8,662

*** Grass seed, Campton, 44 bush.; Enfield, 28 do.; Franconia, 508 do; Groton, 5 do.; Haverhill, 51; Landaff, 37 do.; Lebanon, 32 do.; Lisbon, 91 do.; Littleton, 22 do.; Lyman, 16 do.; Lyme, 141 do.; Monroe, 5 do.; Orange, 22 do.; Orford, 174 do.; Piermont, 2,425 do.; Thornton, 9 do.; Waterville 4 do.; 3,617.**

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COUNTY.

Bushels of potatoes.	Orchard products.	Products of market garden.	Pounds of butter.	Pounds of cheese.	Milk sold, gallons.	Tons of hay.	Pounds of hops.	Maple sugar and molasses.	Pounds of honey.	Forest products.	Value of animals slaughtered or sold for slaughter.	Estimated value of all farm products, betterments, &c.
17,655	2,072	.....	22,870	3,035	.....	3,184	.....	†8,502	480	17,662	13,042	98,517
7,485	2,220	60	15,875	300	.....	1,153	.....	2,200	.....	3,940	7,576	48,304
68,793	1,925	.....	51,958	5,005	.....	5,253	.....	22,920	12	15,314	43,376	157,838
15,225	1,035	.....	10,790	1,325	.....	1,390	.....	5,810	1,030	2,070	4,975	31,670
62,386	2,279	3,612	35,530	2,380	1,600	3,264	1,500	18,090	1,586	10,803	15,783	137,602
10,555	2,807	.....	10,740	4,155	.....	1,735	.....	†5,056	131	9,010	11,258	56,268
87,42	2,589	.....	14,065	2,795	8,025	1,587	.....	†7,735	515	8,315	13,533	63,690
19,694	6,388	70	38,040	14,220	134	*3,892	.....	†46,116	483	14,296	17,166	143,272
33,972	2,067	.....	31,555	10,900	20	4,724	.....	34,250	1,685	.....	18,899	109,520
20,995	2,050	.....	22,935	7,000	387	2,704	.....	†5,950	608	9,082	11,696	85,226
15,418	2,221	.....	19,885	1,190	.....	2,278	.....	15,045	75	9,644	8,523	71,174
2,774	1,012	.....	4,800	50	.....	713	.....	9,360	315	1,035	1,775	20,082
25,058	4,135	2,635	26,559	13,966	960	*4,196	.....	†11,495	1,155	9,643	15,346	125,461
48,850	60	500	18,550	1,475	4,400	*1,444	.....	†19,175	217	3,083	7,971	68,428
29,127	1,447	.....	35,100	7,400	.....	3,632	.....	18,695	50	.....	14,384	79,934
16,849	3,641	.....	24,655	2,955	60	*2,256	.....	†15,400	175	3,533	8,930	70,367
22,860	4,842	10	41,610	11,650	.....	6,114	.....	25,282	270	.....	22,965	153,112
70,843	3,346	.....	83,598	7,544	297	*7,598	800	†11,155	460	50,662	65,233	272,581
6,525	2,335	.....	13,860	1,105	.....	1,534	.....	18,700	.....	7,270	6,775	57,049
16,860	5,946	.....	38,715	700	.....	3,090	.....	†13,900	53	9,770	20,551	118,444
93,835	4,462	3,537	37,640	4,925	.....	*3,911	.....	45,300	253	14,252	14,940	163,537
20,708	8,153	753	34,838	16,940	13,486	*3,966	.....	†9,560	1,606	8,175	24,909	171,044
1,400	405	.....	1,275	.....	.....	180	.....	1,400	.....	1,350	560	6,878
111,645	2,755	1,220	40,190	12,905	107	*4,511	11,505	25,165	2,757	11,795	23,229	200,707
60,651	3,328	2,427	56,980	5,330	2,590	*5,027	11,580	45,490	2,255	17,810	37,342	226,145
42,130	2,250	655	38,670	2,550	2,500	*2,470	.....	18,135	700	8,690	10,015	109,430
40,113	5,768	8	45,219	13,182	200	*5,674	.....	†15,185	425	2,726	25,579	199,204
22,782	651	.....	22,630	1,140	.....	*1,772	.....	17,725	.....	5,484	13,470	61,254
11,693	.....	.....	10,470	2,100	.....	*1,107	.....	6,165	500	.....	4,912	26,308
41,101	4,095	.....	40,900	7,445	9,517	*4,631	.....	†8,975	745	9,883	29,335	204,251
18,725	2,135	.....	33,575	10,250	.....	*3,500	.....	†14,150	480	4,540	19,255	107,845
14,130	5,812	360	32,525	2,300	4,400	3,000	.....	28,350	84	3,812	12,317	104,175
13,700	5,076	345	35,650	1,710	.....	3,165	.....	†29,115	249	9,605	14,108	115,234
14,021	5,492	.....	24,460	1,425	167	*2,710	20	†32,782	363	13,794	9,089	104,527
17,421	3,050	.....	23,400	2,835	60	2,436	.....	†22,015	263	7,945	12,970	93,500
368	76	.....	680	8	.....	*85	2	†400	.....	.....	555	2,878
20,615	3,225	.....	28,850	5,675	.....	2,941	.....	†28,170	20	6,877	13,535	83,645
5,502	1,914	.....	9,075	300	.....	1,008	.....	9,840	139	8,466	3,959	44,008
1,070,206	114,019	16,192	1,078,716	190,062	48,919	114,071	25,407	672,809	20,139	325,336	599,835	3,993,119

† Molasses, Alexandria, 90 gallons; Bridgewater, 123 do.; Campton, 19 do.; Danbury, 79 do.; Enfield, 1,283 do.; Franconia, 10 do.; Groton, 16 do.; Haverhill, 30 do.; Holderness, 30 do.; Lebanon, 695 do.; Lyme, 22 do.; Orford, 84 do.; Piermont, 20 do.; Rumney, 25 do.; Thornton, 6 do.; Warren 76 do.; Waterville, 10 do.; Wentworth, 27 do.

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COOS

TOWNS.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn.	Bushels of oats and barley.	Pounds of wool.	Bushels of peas and beans.
Berlin	1,340	43	153	205	14	$12,121	$209	9	228	1,577	882	83
Carroll	2,915	82	238	233	34	23,317	544	56	6,482	7,155	858	69
Cambridge	163	8	27	13	3	2,390	25	.....	28	417	25	5
Clarksville	4,129	91	355	602	60	27,719	566	.....	12	8,208	1,916	24
Colebrook	13,876	329	1,340	2,401	166	96,508	1,261	63	657	35,644	11,068	229
Columbia	9,823	240	1,207	1,170	104	69,220	1,081	54	566	20,614	4,998	149
Dalton	6,913	178	772	694	68	62,684	1,744	261	2,014	2,857	4,430	244
Dummer	2,019	55	270	248	22	18,259	280	64	253	4,830	1,147	156
Errol	2,123	38	206	301	15	14,245	115	94	157	3,415	1,006	105
Gorham	1,981	52	159	125	60	15,416	130	69	391	1,657	421	151
Jefferson	6,980	207	907	774	92	65,856	2,275	424	1,032	9,605	2,505	272
Lancaster	15,117	422	1,758	2,042	184	123,461	2,314	200	4,709	31,718	8,157	356
Milan	5,512	118	671	493	73	44,588	522	121	439	11,029	1,854	352
N'rthumberl'd	6,555	168	816	708	65	52,134	753	116	2,129	14,054	3,171	149
Pittsburg	6,008	147	901	935	52	49,255	94	21	29	11,625	2,794	31
Randolph	1,251	31	128	97	9	8,774	267	28	.....	1,426	352	49
Shelburne	3,171	86	400	289	45	24,870	143	.....	386	4,193	1,938	149
Stark	4,634	99	588	498	49	35,210	275	92	576	10,378	2,153	191
Stewartstown	11,665	243	1,085	1,760	151	77,388	494	.....	613	22,600	7,243	184
Stratford	6,554	153	728	544	89	50,633	315	116	1,804	14,663	2,227	152
Went's Locat'n	575	5	67	28	6	3,550	8	20	30	855	108	19
Whitefield	7,450	188	782	554	79	62,676	682	494	1,814	13,819	2,345	222
Success	40	4	7	14	.....	872	.....	8	.....	100	32	30
Millsfield	180	4	14	6	3	990	71	.....	5	390	24	6
Dixville	15	.....	4	8	.....	100	.....	.....	.....	.....	.....	...
Gil'n & Atk. Ac'y Grant.	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
Odell	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....
College Grant.	75	2	21	.....	1	1,035	.....	.....	.....	276	.....	....
Martin's Grant	165	3	19	15	2	1,217	17	.....	26	290	125	9
Green's Grant.	75	4	14	.....	9	2,110	.....	.....	.....	200	.....	....
Totals	121,319	2,892	13,637	14,757	1,455	946,535	14,585	2,310	24,380	233,598	61,779	3337

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COUNTY.

Bushels of potatoes.	Orchard products, reckoned in dollars.	Product of market garden, in dollars.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Tons of hay.	Pounds of hops.	Pounds of maple sugar.	Pounds of honey.	Value of forest products, in dollars.	Animals slaughtered and sold for slaughter, in dollars.	Estimated value of all farm products, betterments of stock, etc.
7,165	20	12	4,655	420	60	424	.....	90	65	$2,550	$2,482	$19,230
27,741	67	.....	8,647	425	.....	823	2,285	2,770	326	365	3,594	35,997
1,080	.....	.....	700	.....	.....	99	.....	.....	.....	.....	680	3,409
13,260	.....	.....	12,975	950	.....	*1,393	700	10,950	500	2,277	6,009	32,248
123,959	10	.....	44,580	8,040	775	*4,349	2,368	†25,970	920	.....	36,918	154,865
79,751	.....	.....	41,432	1,520	.....	*3,191	300	14,813	515	6,043	18,115	111,399
49,129	1,072	.....	23,990	3,615	.....	*2,292	15,629	17,874	1,035	4,055	9,605	79,906
18,292	86	.....	6,590	300	.....	863	.....	2,485	10	1,886	3,450	36,865
11,103	47	..	4,450	350	.....	815	.....	450	....	700	1,865	24,957
7,253	39	65	3,356	150	1,202	412	.....	50	40	2,810	2,863	20,929
78,467	269	.....	25,265	1,485	.....	2,456	240	5,055	953	1,346	10,048	84,620
115,870	2,261	.....	68,517	5,415	86	*5,833	1,700	27,455	924	1,256	26,471	174,740
43,080	406	15	17,985	910	195	1,811	.....	1,580	275	6,430	10,313	79,972
25,858	163	.....	19,245	2,150	.....	2,533	.....	12,900	1,427	1,470	11,752	72,544
20,930	...	.....	23,820	800	.....	*2,004	1,400	20,325	.....	3,182	11,660	45,289
8,010	35	.....	3,755	392	.....	356	.....	200	.....	2,275	3,064	18,401
10,435	659	10	9,845	431	194	1,124	1,445	2,125	.....	1,761	9,904	41,922
13,430	183	.....	13,955	780	.....	1,585	....	11,015	375	3,592	6,440	60,638
61,000	.....	.....	34,925	4,695	.....	*3,522	13,928	34,334	384	2,290	25,244	98,592
30,732	141	.....	21,135	1,275	.....	*2,272	.....	25,226	370	6,685	13,000	70,534
2,275	.....	.....	1,040	.....	.....	235	.....	.....	.....	200	530	6,098
69,706	592	...	27,610	1,775	.....	*2,596	3,275	6,715	857	2,067	12,754	102,752
800	.....	.....	375	.....	.....	25	.....	.....	60	.....	125	1,280
1,425	.....	.....	450	.....	.....	85	.....	.....	.....	400	205	3,085
650	.....	.....	100	.....	.....	8	.....	.....	.....	.....	.....	315
.....	.....	.....	... ...	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	....	... ...	5	.....	.....	..	.....	.....	50
150	.....	..	100	.....	.....	60	.....	.....	.....	.....	.....	1,088
620	15	10	300	.....	60	46	.....	.....	.....	264	620	2,679
700	.....	500	400	.....	200	50	... ..	.....	.....	.....	600	2,640
824,271	5,965	612	420,197	35,878	2,772	40,309	33,270	242,382	9,036	53,004	228,411	1,307,044

* 32 bushels grass seed; Colebrook, 35 do.; Columbia, 6 do.; Dalton, 18 do.; Jefferson, 14 do.; Pittsburg, 4 do.; Stewartstown, 125 do.; Stratford, 3 do.; Whitefield, 15 do.; total, 252 bushels.

† 26 gals. molasses.

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RECAPITULATION BY COUNTIES.

COUNTIES.	Acres of improved land.	Number of horses.	Number of cattle.	Number of sheep.	Number of swine.	Estimated value of all live stock.	Bushels of wheat.	Bushels of rye.	Bushels of corn,	Bushels of oats and barley.	Pounds of wool.	Pounds of tobacco.	Bushels of peas and beans.	Bushels of potatoes.
Rockingham.....	232,073	3,845	21,738	7,903	4,255	$1,711,560	18,596	6,018	165,682	72,976	29,074	.....	11,486	483,647
Strafford.....	94,055	1,756	9,621	4,175	1,502	683,987	5,204	1,096	52,806	24,533	15,752	.....	3,343	221,711
Belknap.....	153,655	2,142	15,286	10,087	2,120	104,618	20,690	1,932	90,827	40,964	36,995	.....	7,388	269,999
Carroll.....	175,319	3,058	21,425	8,744	2,725	1,269,268	16,938	1,974	107,499	62,837	32,512	.....	8,413	328,599
Merrimack.....	317,344	4,639	28,447	32,828	3,819	1,886,649	28,215	5,166	184,662	104,887	138,079	.....	5,631	429,650
Hillsborough.....	287,451	4,637	26,702	11,776	5,539	1,852,051	15,357	10,355	165,831	90,347	40,192	.....	6,688	350,136
Cheshire.....	260,517	3,623	17,619	31,313	3,552	1,484,769	5,530	6,339	145,069	125,496	123,837	153,886	1,657	664,008
Sullivan.....	220,521	3,551	18,139	38,249	2,810	1,365,407	16,891	3,709	133,153	146,387	202,971	4,000	2,678	285,169
Grafton.....	457,566	7,104	33,466	85,185	4,264	2,841,207	56,023	6,826	643,069	433,194	442,218	.....	8,662	1,070,206
Coos.....	121,319	2,892	13,637	14,757	1,455	946,535	14,585	2,310	24,380	233,598	61,779	.....	3,337	824,271
Totals.....	2,319,830	37,247	206,080	255,047	32,041	$16,053,051	192,029	45,725	1,652.978	1,335,219	1,123,309	157,886	59,303	4,927,396

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RECAPITULATION BY COUNTIES (CONCLUDED).

COUNTIES.	Value of orchard products.	Value of market garden products.	Pounds of butter.	Pounds of cheese.	Gallons milk sold.	Tons of hay.	Bushels grass seed.	Pounds of hops.	Pounds maple sugar.	Gallons maple molasses.	Pounds of honey.	Value of forest products, in dollars.	Value of animals slaughtered or sold, in dollars.	Estimated value of all farm products, including betterments, etc.
Rockingham	$124,647	$37,433	744,503	72,962	622,834	65,879	...	4	4,666	1,462	3,903	$292,413	$493,887	$2,689,078
Strafford	34,883	5,080	274,491	39,927	107,190	27,565	....	.....	725	73	340	106,597	142,201	884,648
Belknap	59,459	2,686	437,876	80,949	122,607	38,644	330	9	39,778	1,505	3,712	165,030	391,718	1,666,391
Carroll	67,563	1,220	504,143	16,626	10,132	49,546	17	1,350	176,188	3,424	2,952	60,741	286,310	1,707,134
Merrimack	100,345	22,363	705,516	167,703	147,215	72,467	172	17,024	89,802	1,079	6,630	258,805	575,055	2,961,071
Hillsborough	111,226	38,971	704,879	57,140	1,305,894	67,551	359	4,347	45,658	1,881	3,842	304,668	462,482	2,962,483
Cheshire	55,665	2,720	536.472	63,448	51,581	57,096	116	2,365	214,387	1,728	997	128,726	287,351	1,887,859
Sullivan	51,329	517	585,882	100,139	18,212	54,059	297	2,566	346,915	2,025	4,937	119,292	281,366	1,559,177
Grafton	114,019	16,192	1,078,716	190,062	48,919	114,071	3,617	25,407	672,809	2,714	20,139	325,336	599,835	3,993,119
Coos	5,965	612	420,197	35,878	2,772	40,309	252	33,270	242,382	26	9,036	53,004	228,411	1,307,044
Totals	$725,122	$127,714	5,992,674	824,834	2,427,056	587,187	5,160	89,342	1,833,310	15,917	56,488	$2,351,612	$3,747,616	$21,624,004

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THE NEW CATTLE DISEASE.

Within the past year, a new epidemic, called the Mouth and Foot Disease, appeared among some cattle which were owned by several farmers in the southeastern section of the state. It was feared at one time that the distemper would spread and cause very serious damage.

The disease referred to has prevailed very extensively in England and upon the continent of Europe for many years. It was first observed about the year 1839, and though it is fatal in but few instances, it is regarded as very troublesome and damaging to the interests of the stock raisers in those countries. It was introduced into the United States, a few months since, by some cattle which were shipped from England to Canada. They were apparently in good health when they left England, but on reaching Canada, the most of them were found to be infected. It appears that the disease was communicated to other cattle in Canada, and that some of the latter were brought into the United States by railroad, and sold at Buffalo. Some of these diseased cattle were also brought to Albany. At that city the disease was communicated to a large number of other cattle which were brought there for sale. The disease was introduced into Massachusetts by some cattle which were taken from Albany to Brighton. It appeared also in Connecticut at about the same time. In Massachusetts whole herds were prostrated, and though but few died, the damage on account of the sickness and pining away of the animals was, in many instances, very severe.

The disease is very contagious and is sometimes communicated to cattle traveling over the road where diseased ones have passed, and sometimes by persons going from the sick to the healthy, and often, also, by dogs or poultry. S. L. Goodale, Esq., who was ap-

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pointed from Maine to the convention of cattle commissioners at Albany, in referring to this point, says:

"The severest case mentioned was that of a farmer in Massachusetts, who had thirty-nine cows highly fed for the production of winter milk, and ten fattening beasts. This farmer, although he lost by death only two or three, deemed his actual loss greater than if he had killed and buried every animal on his farm before being attacked; as he could, in such a case, re-stock his farm, and resume his milk business. The injury to his beasts by loss of flesh, broken udders, lameness, and the care of treating them, he considered equal to their value at the outset — say upward of $4,000. But in the great majority of cases, this disease has been much lighter, and the total loss and damage was variously estimated at from not more than a tenth in the lightest, to a third or half in the case of herds more seriously affected.

"Plenty of evidence came out that the milk is dangerous to human and brute health. One man related of his own son, a lad of five years, that, by taking the milk of a cow not then known to be affected, but which soon afterwards showed the disease, the mouth became lined with blisters, bad cracks appeared on the hands, and he was feverish and quite ill. In Connecticut sheep had contracted the disease; and in New York dogs fed with the milk, in some cases had it, and in some escaped the disease.

"The extremely contagious character of the malady, and the ease with which it is communicated, were abundantly shown; a single illustration here will suffice. A drover bought healthy cows in New York, and drove them homeward to Massachusetts, and sold on the way. At Albany they were in the yards, and contracted the disease, but did not show any signs of it, nor was the fact known to the drover, until his arrival at home. Several hours after these beasts had passed on a certain road, the owner of a herd living there drove his own herd a short distance over the same road. They never saw the infected beasts, but in four days they were all lame and drooling at the mouth, and all the cows sold on the route also carried the disease where they were taken."

It is understood that the disease was brought into this state by some infected oxen, which were owned in Salisbury, Mass. These oxen were employed in "logging," in the town of Seabrook. Several herds in Seabrook became infected by coming in contact with these oxen, but none died, and in a few weeks the evil dis-

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appeared. Measures were taken to keep the infected animals separate from those which were healthy, and in this way its further spread was prevented. The symptoms of the malady are described by Prof. James Law, of Cornell University, at Ithaca, N. Y., as follows:

"The symptoms noticeable after its period of incubation are a sort of fever, shivering knees, cold limbs, cold horns, hair a little rough; in short, all the symptoms of any fever. The animal refuses to eat and soon becomes weak and greatly emaciated. Then comes a hot stage. The milch cow shrinks from milking; the mouth is hot and dry, and a little froth is observable, and a peculiar smack of the lips which is characteristic of the disease. At this time there is also inflammation about the feet and between the hoofs and upon the udder, mainly on the teats, and also in the mouth; and in the course of another day little blisters will be found in the mouth, and sometimes very large ones, two or three running together and making large sores on the gums. In milking, the teats cannot be properly grasped by reason of the sores. The ulceration between the hoofs leads sometimes to the extent of casting the entire hoof. This all goes on in the course of five or six days. Then begins the work of repair, and gradual healing."

Considerable anxiety has prevailed among the consumers of meat in some of our cities and large towns, in consequence of their liability to be fed upon the flesh of cattle which have been affected with this disease. Prof. Law insists that there is no danger to the public health on this account as it has been proved in Europe that the flesh of diseased animals produces no evil effects whatever. Prof. J. Stanton Gould, of New York, and some others, however, who have examined the subject, do not concur in the views of Prof. Law. Though the point is not fully settled by actual demonstration in this country, it would appear upon a superficial view strange indeed that diseased meat of any kind could be taken into the stomach of a human being without danger to his health and comfort.

In relation to the treatment of the disease, Prof. Law speaks as follows:

"The treatment is of comparatively little moment, beyond keeping the animals clean, and drawing off the milk by tube if the teats are very bad, and washing the mouth with a diluted solution of carbolic acid, and sponging the teeth in the same way."

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A writer in Massachusetts, who appears anonymously discussing the question as to the best method of treatment, says:

"When it is expected to break out in a herd, remove the animal at once away from the rest, and sprinkle slaked lime freely on the stall floors. If it has gone too far and all are likely to come down with the disease, give ground hemlock bark, two or three ounces at a time, for three or four days in succession in a little meal or shorts. If an animal is actually suffering from it with a sore mouth, take a pound of alum in two gallons of water and use it as a gargle once or twice a day. Pour it into the mouth and throat from a horn or bottle.

"If the feet begin to be sore, use the sulphate of copper or blue vitriol, two ounces to a gallon of water, or it may be stronger, at the rate of an ounce to a quart, to bathe the feet, wiping and rubbing well in between the claws. Alternate every day with carbolic acid, that is, use the blue vitriol one day and the carbolic acid the next. Reduce the carbolic acid with fifty parts of water or a little more.

"The animal will have an appetite, but the mouth will be so sore that it cannot eat. Make, therefore, a thin gruel of oat meal, and a little Indian meal mixed in if the animal does not appear to be feverish, and pour it down from a bottle. It will serve to keep up the strength and carry the beast well through. If there is much costiveness, as there will be likely to be at some stages of the disease, give a quarter to half a pound of Epsom salts once a day, poured from a bottle. The above treatment is mild and simple, and will carry most patients well through the trouble."

All writers on the subject are agreed that good nursing is of much more importance than medicine, though the latter may be of advantage if used judiciously. It is understood that, in favorable cases, diseased cattle may be cured in about fifteen days. In considering the question as to the best method of preventing the spread of the disease, Mr. S. L. Goodale, the writer before referred to, says:

"The surest means of prevention, and of arresting its spread when once introduced into a herd, which is yet known, is the employment of sulphurous acid gas, in other words, simple fumigation with sulphur. It is of easy application and trifling cost. Care and judgment are however required. Let some bits of brim-

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stone be burned on live coals contained in a suitable vessel or dish, and the fumes allowed to mix with the air of the building, penetrating every crevice and filling the coats of animals.

"It was formerly thought that these fumes were highly deleterious; but such is not the case unless inhaled in excess. It would, indeed, be easy to induce complete suffocation; but the air may be so far impregnated with sulphurous acid as to be very disagreeable and uncomfortable to breathe, and no harm ensue, but great good. An ounce or two is enough to burn at once for a barn of from six to twelve or twenty cattle, and the operation should be repeated regularly twice a day. The fumes should pervade all parts of the room equally, and not be stronger than the attendant can bear with moderate discomfort."

In referring to this point Professor Law says:

"The danger is from propagation to other herds. We are aided by its not being infectious. It is necessary that the cattle should be absolutely segregated or separated; and it would be well if they could only be moved under some system of permits from the local authorities, who should assure themselves of the healthy condition of the cattle before they were permitted to be removed. It might be hardship in individual cases, but of great advantage as a whole, cattle being sometimes sold before their recovery, their bodies being more or less covered by the *debris* and virus containing the germs of the disease.

"Milk is a source of propagation of the disease. Statements of milk producers are very contradictory as to this. Certain it is that the milk, if drank warm, will propagate the disease. If boiled, however, the virus is destroyed, which should be kept in mind if the milk must be given to calves.

"The great source of propagation lies in the fact that the cracks and crevices, and, in short, all the solid objects in a building, become contaminated, and the virus may remain there latent until they come in contact with some susceptible object. Herein is the danger of the future. The places where the dung is laid should be disinfected."

The barns where the disease has existed will retain the infection for some time, and no hay or manure should be carried to any barn where the disease has not been known. Though this new disease is by no means as serious in its effects as pleuro-pneumonia, it is nevertheless believed by most persons who have

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examined the subject that the public authorities should have the power to prohibit all cattle which are known to be diseased from passing over highways, and to take such other measures as may tend to prevent the spread of the evil. This opinion prevailed at the New Hampshire Farmers' Convention, which was held at Manchester, in January last. At the close of an animated discussion upon the subject the Secretary of the Board introduced the following preamble and resolution:

WHEREAS, The new disease affecting neat cattle, sheep and swine, in neighboring states and in one section of our own state, excites the serious alarm of farmers, stock-breeders and milk-producers in New Hampshire, and demands that such official, associated and individual action be taken as will prevent its further spread in this state; we, therefore, hereby call upon His Excellency the Governor, the State Board of Agriculture, officers of the state, county and town agricultural societies, the selectmen of towns, the superintendents of railroads, and those having control of the means of transportation, to use their influence and their positions to crush out the disease before it shall gain a stronger hold. In order to arrive at some definite action, be it

Resolved, That a committee of five be appointed by the Chair to consider and recommend to this meeting what action should be taken by the farmers of the state and what course they will ask the Executive to adopt in regard to this scourge of our flocks and herds.

The resolution was adopted, and the President of the Convention, Gen. Natt Head, of Hooksett, appointed the following gentlemen to serve as the committee: Joseph B. Walker of Concord, John M. Weare of Seabrook, N. W. Hardy of Nelson, Nathan R. Perkins of Jefferson, P. M. Rossiter of Milford. Subsequently, the committee through their chairman, J. B. Walker, Esq., reported the following preamble and resolutions:

WHEREAS, We have learned upon undoubted authority that a malignant and contagious disease, now prevailing among the cattle of Massachusetts and some other states, has made its appearance in several towns in the southeasterly portion of this state, and is liable to spread into other sections, to the great detriment of the herds, if prompt and efficient measures are not taken to prevent it; therefore,

Resolved, That the officers of the New Hampshire Agricultural Society be hereby respectfully requested to call the immediate attention of His Excellency the Governor to this alarming fact and suggest to him that, after investigation of the same, by a commission duly appointed, or otherwise, he cause such efficient measures to be taken for the suppression of the disease as the exigency of the case requires, and that before it shall have spread throughout the barns, fields and pastures of the state, thereby averting an impending scourge, and securing the lasting gratitude of all our citizens.

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A copy of the above resolution was laid before Gov. Stearns, and His Excellency indicated a desire to do all that was required upon the occasion. He authorized the Chairman of the Board of Agriculture to make such investigations as seemed to be demanded, and report results to the Governor and Council for their consideration. As this disease did not spread, but rather diminished and gradually disappeared, no action seemed to be required.

At the meeting of the board May 1, the subject was fully discussed, and a report made by the Chairman embodying his view of the matter as obtained by conference with other parties. At that date the following circular was sent out:

CONCORD, May 1, 1871.

To the Farmers and Stock-breeders of New Hampshire:

The great anxiety manifested in various sections of the state regarding the liability of the Foot and Mouth disease to be communicated to our herds in New Hampshire, induces the Board of Agriculture to make a brief and reliable statement of the facts in the case.

There is no law on our statute books that will allow the appointment of a commission, as in other states, nor has the Governor authority to enforce any measures in regard to the matter. In the absence of law and executive authority, attention has very naturally been turned to the Board of Agriculture, though that organization is equally powerless with the Executive.

By request of His Excellency, the Governor, the chairman of the board has made investigation in the few cases reported in this state, has conferred with the commissioners of Massachusetts, and has become satisfied, —

First, That no cases have occurred except in one locality in the south-east section of the state, and that there it has been very limited and existed only in a mild form.

Second, That the restriction which has been placed on cattle-owners in Massachusetts, forbidding them to drive animals from town to town, has proved effectual, thus far, in preventing the introduction of the disease to this state, except in the instance above named.

Third, That the removal of the restriction, at this date indicates that the commissioners in that state, who have taken great pains to prevent the spread of the disease and to exterminate it, are satisfied that no danger now exists in communicating it to our herds.

Fourth, That it is the experience of the Massachusetts commissioners that lean cattle, such as are usually taken to our pastures for the season, are not very liable to contract the disease, and that it attacks mainly only highly-fed milch cows, fat cattle, and well conditioned working oxen.

The Board of Agriculture in their report, soon to be printed, will urge the passage of a law to protect our state from the effects of diseases among cattle.

In the meantime, we desire that information be communicated to the board whenever a case may occur, either in cattle brought from other states, or among our own herds.

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Should cases occur, use carbolic acid, prepared by a druggist, for direct application, and for a disinfecting fluid, the Massachusetts Commissioners give the following prescription:

"Take five pounds of copperas, and dissolve in hot water; add to it one gallon of carbolic acid (which contains thirty-two per cent. acid); after which slowly add thirty gallons of water, occasionally stirring the mixture. Apply daily for one week or more, over the ground which the cattle have trodden; also thoroughly wash the floors, stanchions, mangers, and the fences of the cattle yard."

In accordance with the suggestion then made, and by authority of the board, the Secretary proposes the passage of a law in brief and simple terms, which shall authorize His Excellency the Governor, whenever he shall see sufficient reason, to appoint a commission empowered to exercise all proper authority to prevent unnecessary loss, alarm or inconvenience in consequence of the disease, said commission to exist only at the option of the Governor.

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NOXIOUS INSECTS AND THEIR DESTROYERS.

One of the greatest evils that beset the farmer and fruit grower is the great number of noxious insects of various kinds, that destroy the young germ as it springs from the ground, that feed on the foliage of tree and plant, that devour the matured harvest, that plow their way into the growing fruit tree, or are domiciled in the heart of the ripened fruit. On every hand are insect enemies which counteract the most patient toil of the husbandman, the skill of the inventor and the knowledge of the chemist. The great desire of the farmer is to know the remedy that he may save his crops from the havoc which they make in the field and orchard. Without attempting to present a studied paper on Entomology, we call attention to a few of the destroyers of vegetation named in responses from the farming towns of the state.

THE CABBAGE-WORM.

There is no slight interest felt in regard to the new pest of the garden, the destructive and annoying cabbage worm, known entomologically as the *Pieris rapa*. It has appeared suddenly, from across the Atlantic by the Canadian route, but propagates so rapidly and seizes hold of the growing crop with such rapacity as to destroy that important vegetable in great quantities. The native insect is a small, white winged butterfly, as represented by the accompanying engraving.

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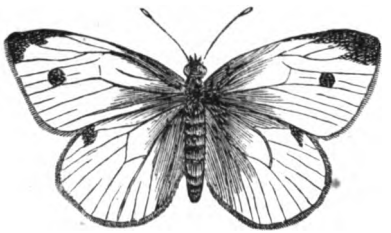

This cut represents more fully the male insect. The only difference in the appearance is the varied marking of the wings. The miller corresponds in many respects with the caterpillar-butterfly; as do also the other forms of the existence which this insect assumes.

The caterpillar here represented is an inch and a half in length, of green color, with a yellow stripe down the back, and a row of yellow specks on each side. It is an enormous feeder, consuming many times its own bulk. When it has done its work of devastation, it steals away into a sheltered place and enters the chrysalis state, (as represented in this cut,) from which it emerges in a week and deposits its eggs for another brood.

The remedy is the use of the Persian Insect Powder, carbolic powder, lime, black pepper, phosphate, and the incessant slaughter of the insect in all stages of its existence. Vigilant and persistent effort will be required to accomplish the work, but unless it be done, farewell to our cabbage fields for years to come. But little has, as yet, been written regarding it, because not much is known, except that it has no mercy on the cabbage. Two broods a year appear, one in early summer and another in August or the first of September. The first assail the young plant, and generally use it up. The second lay siege to the incipient head and destroy it, if possible, sticking to it and working to the heart as fold after fold of new leaves is sent out.

THE APPLE-WORM.

There is no single insect attacking the apple that does more injury than the apple worm. It is a whitish insect, with a dark colored head, and burrows at the core of the apple or pear, gorging as it moves along, and filling the path it makes with its excrement. Many apples, in consequence of its ravages, fall to the

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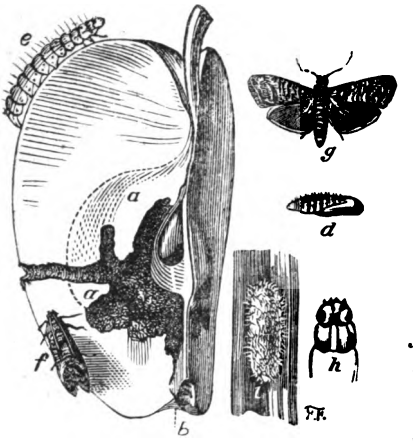
ground before they are fully grown, and others, attacked later in the season, are rendered nearly worthless by the effects of this insect.

We give in the annexed figures a representation of the destructive vermin in the various stages of its existence.



The letter *b* shows the point of entrance; the black space between *b* and *a*, and extending to the side of the fruit, indicates the work of the larva; *e* the full grown worm, the natural size, after leaving the apple; *h* the head and a single joint of the insect considerably magnified; *d* the pupa; *i* the cocoon; *f* the moth at rest, and *g* the same with extended wings. The moth is readily distinguished from other moths by bright, coppery scales at the tips of its wings. Little is known of it by the common fruit grower, and but few have probably ever seen it. It is of foreign origin, but has now become thoroughly naturalized, and is as much at home here as in its mother country. It has infested orchards in the Eastern states for more than half a century, but is comparatively a stranger in the extreme west.

Soon after the apple is formed, usually about the first of June, this moth makes its appearance, the female, flying from fruit to fruit, depositing her stock of eggs, frequently numbering hundreds, generally in the blossom end, though sometimes in the other portions of the fruit. Having performed this duty to her posterity, and contributed thus to man's annoyance, she dies of old age. In a few days the egg hatches, and the larva begins to make a tunnel to the core, where it grows fat for three weeks or more. It then perceives a change approaching, and prepares for it by excavating a path to the surface of the apple. The fruit by this time is blighted, and falls to the ground. The worm passes out through the aperture in the cheek of the apple, and seeks some convenient crevice, usually in the trunk or crotch of the tree, where it envelops itself in a silken cocoon of a dingy color. There it is transformed into the pupa state, and in due time it

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bursts forth into a moth, and is ready to commence a second generation the same season. But the fruit is now larger, and though infested, does not fall so freely as earlier in the season. Indeed, it remains on the trees usually until the harvest. Often the worm remains concealed at the core until brought to light on using the apple. In other cases, it comes out and makes the cocoon in the rough places of the cask, and remains ready to change into a moth in due time in the spring. Those that escape before the fruit is brought to the house, build their protection so thoroughly as to guard them through winter's frosts and snows, and leave them in a condition to be transformed into moths in the warm days of spring. The insect infests pears, crab-apples, and all seeded fruit, and actually destroys, in many sections, one half the apple crop, year by year. We experience most seriously the effects of the noxious insect throughout New England.

The question naturally arises, what is the remedy?

It is, in the first place, important to destroy all the fallen fruit possible, immediately on its dropping from the tree. This may be done by gathering it up, and feeding it to the hogs, or by allowing swine to run in the orchard and devour the windfalls before the worm leaves them, or by carefully searching them out and destroying them. Especial pains should be taken to destroy the cocoons deposited about barrels and the store-room in which fruit has been kept. A perpetual and earnest prosecution of the business must be made in order to be successful.

THE BIRDS THE FARMER'S FRIENDS.

Among the destroying agencies of the pests of the farm we may name the phosphates, plaster, carbolic powder, lime, and the powdered dolomite from the gold mine section of the state, but above all we should entice the insectivorous birds to our fields, and protect them in the co-operative work of destroying these harmful insects. With this object in view, early in the season the Secretary issued a letter through the newspaper press calling upon the farmers of the state to aid in executing the law which affords protection to these friends of the agriculturist. The letter was as follows:

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MANCHESTER, March 27, 1871.

To Farmers, Gardeners and Fruit-growers:

The early return of an unusual number of birds will be an inducement for the thoughtless sportsman to exercise his skill in their destruction. On the approaching Fast Day, when men are seeking relief from the confinement of the workshop, and boys have escaped the restraints of the school-room, there will be an especial temptation to seek the orchards and woods, to shoot those birds which aid the farmer and fruit-grower in destroying noxious insects. It is the duty of every gardener, fruit-grower and cultivator of the soil to protect these creatures, which do much more good than harm, and to call the attention of sportsmen to the provisions of the law in this regard.

The birds protected through the entire year are robins, thrushes, larks, bluebirds, sparrows, swallows, martins, woodpeckers, bobolinks, yellow-birds, linnets, fly-catchers, and warblers; those protected through the summer season, some of them until September, are snipes, woodcocks, plovers, rails, yellow-legs, sand-pipers, partridges, grouse and quails. The penalty for each bird killed is two dollars, and in some cases five dollars.

Any person may protect his own premises at all seasons of the year by posting notice thereon, or by publishing such notice in a county newspaper.

Newspapers throughout the state are requested to publish this notice, and it is desirable that persons interested in the preservation of the feathered tribes should report to the Secretary of the State Board of Agriculture, or to some newspaper, the manner in which the law is observed in different localities in the state.

JAMES O. ADAMS,
Secretary of the State Board of Agriculture.

The appeal met with a cordial response from various sections of the state, and was the means of creating a deeper interest in the preservation of those birds which contribute to the pleasure of man by their songs or aid him in the destruction of noxious insects. A citizen of Manchester, who has made the study of New Hampshire birds a specialty, gives the accompanying interesting paper, in response to the suggestion of the Secretary:

MANCHESTER, May 25, 1871.

To James O. Adams, Esq.:

Some weeks since I read the appeal which, as Secretary of the Board of Agriculture, you issued, calling attention to the law for protection of birds in this state, and to the importance of maintaining it. This law is, on the whole, a very good one, and needs but slight modification to render it what it should be in all respects; but it is so difficult to detect the violation of it that its maintenance depends almost entirely upon correct public sentiment. This subject should command the attention of three classes, at least, in our community, viz.: the farmers, educators and sportsmen. You have spoken for the first class, in the right spirit and at the right time; and now, at your

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suggestion, I will say a few words on the part of the second class, if not for the third.

Thus far the sportsmen have taken the lead in this matter, by procuring the enactment of laws for the protection of the so-called game birds from destruction at improper seasons, and by unsportsmanlike means, and by urging the importance of sparing, at all times, the lives of all other birds not positively injurious to man. Mr. Roosevelt, of New York, a genuine sportsman, has written ably and eloquently in behalf of the birds, indignantly condemning their indiscriminate slaughter by pot-hunters and wanton boys, who know scarcely one bird in a hundred that they kill.

Our American ornithologists, Audubon, Wilson, Nuttall and others, have done much in this direction, by showing the value of birds in destroying noxious insects; but their works are accessible to but few, and the great majority of people are ignorant of the immense number of birds that are beneficial to man, consequently the birds suffer from man's ignorance of their value. Our feathered friends need only to be known to be appreciated, and, if the general principles of ornithology and entomology could be practically taught in our public schools, they would find in the rising generation an army of defenders instead of destroyers, as is too often the case now. In some places Natural History has been introduced into the course of study of the higher grades of school; but there is no reason why it should be limited to these grades, for children from eight to twelve years of age become most ardent and successful students of this science, and there is no better place for its practical, and therefore successful, pursuit than in the district schools that are scattered over the agricultural portions of this state. Let farmers and teachers, therefore, join hands in commending this study to the schools of this state, and give to the pupils thereof a pleasant and profitable task,— recreation, rather — and thereby secure a more complete protection of our birds than the most stringent laws can obtain, in a community where ignorance prevails, as to the value and beauties of the feathered creation.

But, you may ask, will not the pursuit of this study involve the destruction of some birds as well as insects for its proper illustration? That will be the case, to a limited extent, I admit. Science is inexorable and demands her victims, but not so many as may be supposed. I call upon all who have any knowledge of the matter to bear witness, that where science sacrifices tens, thousands are slain through ignorance and wantonness. A plea for the protection of birds may be based on moral, æsthetical and utilitarian grounds. It will be sufficient for my present purpose to consider the last, though much might be said in favor of very many birds, on account of the beauty of their plumage, the music of their songs, their marvelous instincts and habits, which so happily illustrate the laws of adaptation in nature.

The utility of birds depends mainly upon their destruction of insects, which form the principal diet of a large portion of the feathered tribe, in the adult state, and of a still larger number during immaturity. Birds require a large amount of food to maintain the intense circulation and vitality peculiar to that class of warm-blooded vertebrates.

Insects, after leaving the eggs, pass through a three-fold development. During the first stage they are in the form of a grub, worm or caterpillar,

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and are called *larvæ*. In the second they are dormant, being concealed in a cocoon of their own weaving, buried in the ground or suspended by a noose of their own manufacture, and are called *pupæ*. When the third is reached they have become mature insects, and are furnished with wings for locomotion.

Now, some birds consume the eggs of insects; others, such as the warblers and vireos, prey upon their larvæ; still others, such as swallows, flycatchers and goalsuckers, devour the full-grown insect. Woodcocks and some others probe the earth for worms; while thrushes, of which there are several species in this state, find grubs on or near the surface of the ground. Woodpeckers penetrate the trees for their insect food, while the creepers and nuthatches explore the crevices of the bark, with like intent. The flycatchers proper dart out from their perches and seize their prey on the wing, while the swallows, whippoorwills and night-hawks pursue their game in the open air.

There are about three hundred different species of birds found within the limits of New Hampshire, during some portion of the year. Some of these are found here but rarely, and stay but a short time each season, while others are very abundant and remain most of the year. In respect to their value to the agriculturist, these birds may be divided into three classes:

First, Those that do neither harm nor good.

Second, Those that do both.

Third, Those that do only good, and that continually.

To the first class may be assigned the aquatic fowl, shore birds, and most of the so-called game birds. By game birds are meant those whose flesh is valuable for the table, and on that account are hunted by sportsmen. The following are the principal game birds of this state:

The ruffed grouse, commonly called partridge, and the woodcock stand at the head, and are the only ones of much value. The former should be protected, except during the three autumn months, and the use of snares, traps, gins and other unsportsmanlike means of capturing them, should be prohibited at all seasons. The latter should be protected from the time of their arrival in spring until the middle of July, at least. To these may be added pigeons, now quite scarce, a few English snipe, a sprinkling of quail in the towns near Massachusetts, the spruce partridge of the northern counties, a small number of plovers and sandpipers. All these are harmless except the partridge which, it is alleged, does some damage to the apple crop in certain localities, by budding the trees in winter. On this point there is need of further testimony before a fair decision can be made, either for or against the partridge.

There are two sides to the account with the second class, which includes the *corvidæ* or crow family, which embraces crows and jays, and the raptores or birds of prey. There has been considerable discussion among naturalists in regard to the common crow. Audubon makes an earnest and eloquent plea in his favor, admitting that he has some faults, but declaring that on the whole he does much more good than harm, and is therefore worthy of protection. On the other hand, Mr. Samuels argues as strongly against him, and after an elaborate account of the merits and demerits of this much

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abused crow, he concludes with the following statement, which I quote from his valuable work, "The Birds of New England:"

"We find that, during the whole year, it is beneficial to the amount of two hundred and twenty-nine units, and that it is injurious to the extent of four thousand nine hundred and eighteen units. If, for the sake of the greatest indulgence, we take but one fourth of this enormous disproportion as the actual fact, we still have an exhibit that proves at once that these birds are not only worthless, but are ruinously destructive. . . . In conclusion, I will say that the jays are equally injurious with the crows, and that they are not deserving of a moment's indulgence or protection at the hands of the ruralist."

The principal charge that Mr. Samuels makes against both crows and jays is that they destroy great numbers of the eggs and young of insect-eating birds. Many farmers suffer injury by the depredations of the crows upon cornfields in spring. Damage of this kind can be estimated with some degree of accuracy, but the injury he inflicts by destroying other birds is not so easily discovered or estimated. Cannot measures be taken to ascertain what proportion of our farmers sustain loss from the crow's corn-pulling propensity, and the extent of such loss? It would seem, then, that the crow question is still an open one.

Nearly the same statements can be made both for and against the birds of prey, of which there are twenty-two species that may be found, some of them rarely, however, within the limits of New Hampshire. This order includes the falcons, truehawks, buzzard-hawks, kites, eagles and owls. The eagles are too scarce to be of much account in this discussion. There is but one species of kite, which is known as the marsh-hawk, mouse-hawk, &c., and may be recognized by its long wings and tail, by a conspicuous white spot on its rump, and by its habit of soaring over fields and marshes a few feet above the ground, just clearing the fences, in search of field mice which are its principal food. This bird does much good and I do not know that it does any harm.

The other birds of prey may be accredited with doing some good by devouring mice, snakes and other vermin; but they make sad havoc among the small birds that are the friends of man. Some of the large hawks and owls make destructive raids upon farm-yards, and carry off chickens and other domestic fowl, but this is rather an exceptional habit, as the majority of farmers suffer little or no injury in this respect. The goshawk, the red-tailed buzzard, and several other large hawks, and the great horned owl, are very destructive of partridges and other game birds, and are consequently the natural enemy of the sportsman. If a hawk has once tasted of chicken, he is very apt to continue his attacks upon the farm-yard, and there is no sure remedy but the gun or trap.

The third class contains a great majority of all the species found in this state, and many of these species are very numerous, much more so than any belonging to the other classes which have been named. In this class are nearly all the birds of the order *insessores* or perching bird, including the great army of feathered life that frequents our gardens, orchards, fields and forests. Among these we find the thrush family standing at the head of the

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song birds. The robin, cat bird, brown thrush, hermit thrush and the wood thrush, that sweetest of forest minstrels, are well-known members of this family. The numerous family of warblers must be reckoned in this list.

The warblers are an exceedingly interesting group of birds, characterized by the most delicately beautiful plumage, frequenting the borders of swamps and forests, seldom noticed by the casual observer, ever busy in pursuit of the enemies of vegetation, and nearly all of them perfect little gems of feathered beauty.

The numerous sparrows, buntings, finches, flycatchers proper, swallows, goat-suckers, vireos, wrens, titmice, and many others, mostly well known, must be included in this division. Most of these consume insects during a portion of each year, and many of them subsist almost entirely upon some form of insect life. They are the friends of the agriculturist, who should protect them for value received. The genuine sportsman, too, has no desire to kill any birds that are not legitimate game. I will here quote a passage from Mr. Roosevelt's "Game Birds of the North."

"Every tribe of birds has its allotted part to play; and if destroyed, not only will its pleasant songs and bright feathers, gleaming amid the green leaves, be missed, but some species of bug or insect, some disgusting caterpillar or injurious fly, will escape well-merited destruction, and increasingly visit upon man the punishment of his cruelty and folly.

"The beautiful bluebirds, the numerous woodpeckers, the tiny wrens, the graceful swallows and noisy martins, are sacred to the sportsmen, and constitute one great division of the creatures he desires to protect. It is true that enthusiastic foreigners, with cast-iron guns, are seen peering into trees and lurking through the woods, proud of a dirty bag half filled with robins, thrushes and woodpeckers; but let no ignorant reader confound such persons with sportsmen."

The above division of the birds into three classes will be found sufficiently accurate for a general view of the subject, though there are exceptions in each case. The birds of the first class are already protected where and when protection is needed, although many would favor allowing woodcock to be shot two, or even four weeks earlier than the present law permits. The harrier or mouse-hawk is the only member of the second class that I can confidently recommend for protection. The third class are sufficiently protected so far as the law is concerned. In some states, New York for instance, an exception is made in favor of those who wish to procure specimens for scientific or educational purposes, and a similar exception should be made in our bird law. The value of these birds cannot be too highly appreciated; and their protection depends more upon a due appreciation of their value than upon legislative enactments.

Farmers have excellent opportunities for observing the habits of birds and other forms of animal life, and their observations ought to be made available to the interests of ornithology, and other branches of natural history. If any wish to become somewhat versed in this branch of study, without troubling themselves with unnecessary technicalities, they will find Hooker's "Natural History" an excellent work on the general principles of that now popu-

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lar science; Samuel's "Birds of New England," a valuable and convenient manual on the ornithology of this state, and Tenney's "Manual of Zoology," a cheap and handy volume for general reference.

If this article shall create the least interest in our birds, so that thereby any of our sweet songsters may be spared to "charm the air" about our New Hampshire homes and farms, I shall feel that I have been abundantly repaid for writing it.

Very truly yours,

W. W. COLBURN.

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CONCLUDING WORDS.

Though we have extended our report far beyond the limits originally set, we have but imperfectly discussed the topics presented, and have been compelled to pass entirely many subjects we were anxious to consider. We have unwillingly postponed them until a future time, and have even rejected papers already prepared by the Secretary and correspondents, which we deem important to present. The proceedings of our meetings have been very briefly reported and only a part of the papers read have been printed. Some of the most practical addresses, being unwritten, have not been given to the public, for the obvious reason that the Secretary has not been adequate to the task of reporting them, and the board have had no means of employing a special reporter. Such as we have given are indicative of the work accomplished, or at least attempted, and afford an assurance of what may be effected in the future.

That our efforts have been appreciated, and that we have awakened a new interest among the farmers of the state is evident from the many applications from all sections to hold meetings; from the full attendance generally given, and from the spirited discussions which have been maintained. Among many letters of congratulation, and even of compliment, received from agriculturists, we copy the following letter from Ex-Governor Brown:

CONCORD, Mass., April 28, 1871.

To James O. Adams, Esq., Secretary of the N. H. Board of Agriculture:

I cannot refrain from expressing my gratification of the wise course of your legislature in establishing a State Board of Agriculture, and of the prompt action of the board during the last winter. That action has awakened an interest and ability which have remained dormant for a long time, for the want of some exciting cause to call them forth, and afford opportunities for public expression.

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At the meetings at Derry and Chester, especially, some of the most practical and valuable papers were read, as the essay on "Drainage," by Mr. Walker; that on "Grasses," by Mr. Beede; and that on "Plant Life," by Mr. Hills. If you publish and send out a large edition of your report, and the local papers copy freely from it, I have no doubt that the cost of publishing and of sustaining the meetings will be repaid more than fourfold by the increased value of agricultural products in the state; and as these are increased, so will be the valuation of your cities and towns, and the general prosperities of the state.

Another winter of judicious action on the part of the board will arouse an interest among your farmers, such as has never been felt before. Wishing you abundant success in promoting and sustaining this *right arm* of the nation,

I am very truly yours,

SIMON BROWN.

LETTER FROM WILLIAM D. LOCKE.

NEW IPSWICH, February 13, 1871.

To James O. Adams, Secretary of the State Board of Agriculture:

Really is it so? Is there "a good time coming" to the patient, toil-loving mechanics and farmers of the "Old Granite State?" Surely there are such indications, if the present movements are prophetical. Though an invalid for the past six months and not able to attend any of the agricultural conventions or public meetings, yet I have read the reports with deep and increasing interest, and also those from the various farmers' clubs, so full of practical facts and hints. We certainly have agricultural talent, but it has been quietly practicing, at home. The legislature did wisely in forming a Board of Agriculture. The board have done wisely in inaugurating public meetings. Now this talent is being diffused, and, while the public are greatly benefited, these men of talent and practice are as much benefited by contact with kindred minds. You have our thanks, gentlemen. Cheerily, we say go on! Wake up the Old Granite State, and we shall see!

WILLIAM D. LOCKE.

Communications equally valuable and of similar import have been received from such eminent gentlemen as Hon. Marshall P. Wilder of Mass., Hon. J. Stanton Gould of New York, Ex-Gov. Holbrook of Vermont, the Commissioner of Agriculture, and many others, which we do not feel authorized to publish. These are particularly gratifying to the members of the board who have been determined to achieve success. Yet we have but just begun a work that must be prosecuted until its influence shall be felt among the farmers of the state.

The law requires the board to make a detailed report of the expenses incurred year by year; this we cannot do to any great extent the current year, as the bills have not all been allowed by

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the Governor and Council, as the law provides. Aside from the printing expenses, which will appear in the report of the treasurer and are, so far as allowed, but $193.96, the entire expenditure, including expenses of members in traveling to attend meetings, postage, stationery and incidentals, and the services of the Secretary in conducting the correspondence, recording proceedings of meetings, preparing the annual report and reading proofs of the same, will fall short of one thousand dollars. The bills already allowed for actual expenses of members amount to $307.83. One hundred dollars more will cover the remaining bills for money expended. To this should be added the cost of arranging the census statistics ordered by the Executive, and the compensation of the Secretary, to be allowed by the Governor and Council.

We cannot close this report, without once more expressing the obligations of the members to those gentlemen who have so willingly aided the board in conducting the meetings, and contributing material for this volume. They have asked no compensation, and have even paid their own expenses to attend the meetings. We shall need their services in our future labors, and with them the aid of all the agricultural talent our state affords. To secure this, for any length of time, it will be necessary that means be provided to render, at least, a slight compensation for the labor and money expended.

And now, your Excellency will allow us to express our appreciation of the interest you have personally and officially manifested in our efforts, and the cordiality with which you have seconded our labors.

In closing our work for the first year of our organization, we desire to say to the people of the state, of all pursuits and of all interests, that though nature has not been lavish in the bestowal of fertile soils; though our plains produce only by the application of labor and fertilizing material, and our hills yield sparingly their annual harvests; though our population has been reduced with the last decade, and farms once productive have been abandoned to pasturage and forestry; we have not retrograded in agricultural wealth, in business activity, nor in general industrial interests. Though we find much to discourage us in the cultivation of our stubborn fields, in the severity of our winters, the frosts of spring and autumn, and the droughts or rains of summer; though we are subject to burdensome taxes, and, oftentimes, dispose of the increase of our flocks and the products of our soil at scarcely

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compensating prices; though we see with regret, and even sorrow, our sons and daughters abandon the farm for city life, or a home in the great West; we have yet much to encourage us in the general prosperity of the state, in the upspringing of cities by our rapid waterfalls, in the increase of manufacturing interests and the consequently increased demand for the surplus of our fields, our pastures and our forest lands, in the greater intelligence of our population, the higher elevation of our educational institutions, and in the moral integrity and the unswerving patriotism of our citizens. We can refer to such elements in the character of our state, look forward with hope to a brighter day in our rural industries than the present, and rejoice that we dwell among the hills of New Hampshire.

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NEW HAMPSHIRE AGRICULTURE.

1871
210

FIRST ANNUAL REPORT

OF THE

BOARD OF AGRICULTURE

TO

HIS EXCELLENCY THE GOVERNOR.

MAY 1, 1871.

BY

JAMES O. ADAMS,

SECRETARY OF THE NEW HAMPSHIRE BOARD OF AGRICULTURE.

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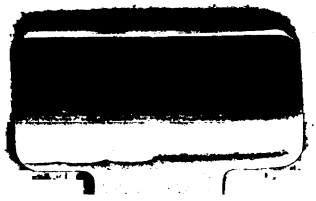

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